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LECTURES
ON
COMPARATIVE ANATOMY
AND
ANIMAL PHYSIOLOGY,

DELIVERED BY

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LECTURE XXIX.

ON THE LIGAMENTS AND ARTICULATIONS, OR THE ORGANS OF CONNEXION.

HAVING considered the solid parts which compose the skeletons of animals, we have now to examine the organs by which these are held in connexion, and are enabled to move on each other. Next to the almost unorganized materials of the skeleton itself, these connecting organs possess the lowest degree of vitality, which is a wise provision for the stretching and compression to which they are continually subjected. Even in the highest animals these parts are but scantily supplied with blood-vessels and nerves, and have a corresponding low degree of sensibility, slowness of growth and reproduction, and great tenacity of life. Where the skeleton is composed of pieces of a solid unyielding nature, these must be connected together by elastic substances, to admit of the necessary motions of the parts on each other. But, from observing the articular surfaces of the bones in the higher classes of animals, covered with soft cartilage, lubricated with synovia, and connected by capsular ligaments, we are not to infer that the solid parts of the skeleton in the lowest tribes of animals are united together according to this complicated plan. In the higher vertebrata the ligaments are, for the most part, merely organs employed to tie the parts together, and to limit and direct their motions; but in the lowest tribes of invertebrata, the physical property of elasticity possessed by these connecting parts, is called more frequently into action, and made to assist in many of the most important movements of life, thus dispensing with so much muscular force and mechanism. Where the framework of the body is composed of parts that are so soft and elastic as to admit of all the necessary movements, it would not be of advantage, but only tend to weaken the skeleton, to divide it by articulations or solutions of continuity of its parts. We perceive no articulations, therefore, and consequently no ligaments, in the soft gelatinous bodies of the polygastric animalcules; and the mode of attachment of their external vibratile cilia, as well as the mechanism of their movements, is unknown. In the divided skeletons of the lowest invertebrata, we do not find the parts connected with each other by bands of a fibro-cartilaginous substance passing from the end of one piece to the beginning of the next, but the whole of the solid parts are enveloped entirely in a continuous elastic substance which admits of the necessary motions, and binds together the solid parts.

In the poriferous animals, the dense siliceous spiculæ, and those of a calcareous nature, are either wholly or partially embedded in a firmer and tougher portion of the general cellular tissue of the body. By this connecting substance, generally transparent and of an amber colour, the crystalline spiculæ throughout the whole body are held together after death, and after the softer matter of the animals has been washed away. The presence of these earthy needles in the cellular tissue, within which, and by which alone, they are formed, probably excites the surrounding texture to a greater condensation, and they probably contain a portion of the animal matter in their water of crystalli-

zation, and in their interior cavities, giving them transparency and tenacity. The spiculæ, after being formed entirely within the cellular tissue, appear, by succeeding motions of the body, to be pushed through that matter, and thus made to project into the pores, into the canals, or from the general surface of the body. There is the most perfect order, and a distinct plan of arrangement, as well as distinct forms of the spicula, in each of the species of these animals. In the horny species there are no articulations in the component tubular filaments, because their elasticity allows the requisite motions to take place without joints. They anastomose with each other throughout the whole body.

Among the polypiferous animals there are innumerable forms of articulations both in the horny and the calcareous species. In the *corallinæ* we observe the component conferva-filaments to have at regular distances a free uncalcified surface, forming so many joints to admit of yielding and bending. In most of the soft tubular horny zoophytes, as the *sertulariæ*, *plumulariæ*, *serialariæ*, *cellariæ*, we perceive a jointed appearance both in the stem and branches, and from these thin and tender portions of the exterior horny covering, chiefly has the contained fleshy substance been able to shoot out new ramifications, cells, or vesicles. We find these articulations, like circular rings or strictures, most symmetrically disposed on the branches of the *campanulariæ*; we see them on the minutest divisions of the *antennulariæ*, and on these *tubulariæ*, where they produce transverse markings, like the divisions of the larynx. In these constricted parts, however, there is no want of continuity either in the contained soft fleshy matter, or in the enveloping horny axis—no true joint. In the *cellaria thuia*, the lower branches of the stem regularly drop off at these apparent joints, and thus always leave a large portion of the stem naked; in the adult state the upper part only of this stem presents a series of ramifications, which, however, were developed from every part of the stem during its growth. Indeed, the phenomena of the circulation, long since pointed out by Cavolini, in many of the *sertulariæ* which have this jointed appearance, showed that there was no interruption to the continuous central cavity passing through the fleshy portion of their stem and branches. These apparent articulations increase the flexibility of the whole axis, and allow the contained fleshy substance to produce, more easily, developments from tender parts of the horny covering. The calcareous spicula in the fleshy crust of *gorgoniæ*, like those of the general texture, and on the surface of the polypi of *lobulariæ*, are not articulated together, and do not compose the frame-work of, or give form to, the whole body. Between the several calcareous joints of the *isis* we perceive that the black-coloured elastic horny substance which connects those calcified portions together, is formed by successive depositions, in the same manner as the solid calcareous substance itself. They are formed at first of a lengthened narrow portion of soft translucent homogeneous substance, which becomes gradually reinforced by the successive deposition of new layers, and those keep pace with the increasing strength and weight of the parts of the skeleton that they have to connect and support. They permanently retain, however, sufficient elasticity, notwithstanding the numerous coats of which they consist, the numerous concentric layers which compose them, to allow of the necessary motions of these animals in the living state. These elastic parts are only uncalcified portions of the animal matter, resembling a condensed mucous secretion or congulated albumen, which permeates all parts of the solid calcareous joints.

The *acalepha*, like the *polygastrica*, having a soft gelatinous texture of the whole body, are destitute of articulations and ligaments, and even the thin calcareous laminæ of the *porpita* and *velella* are without joints. We have seen that the skeleton is more solid, and consists of numerous pieces, in the *echinoderma*, and these pieces, placed on the surface, are generally moveable on each other, and present numerous and complex forms of articulations. This greater perfection in the articulations of the echinoderma corresponds however with the higher degree of organization in the interior of the body. We perceive that the parts of the shells of the *echinida* are firmly connected with each other, both in the recent and dried state. We find that even after considerable maceration they remain in connexion, yet they must grow by depositions around all their margins—grow superficially, laterally, and in every direction. They appear to be thus held in connexion, not only by the connecting secreting animal matter that served for their growth and repair, but by that quantity of the carbonate and phosphate of lime which the enveloping animal matter itself contained. In the young animals those portions are more easily detached from each other, where the secreting animal matter is greater in proportion to the quantity of the solid earthy materials. In the osseous parts of the mouth of those animals, we find articulations much more moveable and complicated in such portions of

the skeleton as serve to connect the alveoli of the teeth with the solid parts of the shell; the internal oral laminæ that rise up from the inferior circular orifice for the teeth, support the muscles and ligaments. The most complex form of the articulations which we meet with, however, in those animals, is in those exterior moveable spines which serve the animals for progressive motion, and as a means of defence. In the echinida we observe the surface of the shell to be studded with numerous tubercles, disposed both upon the ambulacral and the tubercular plates. The exterior of the base of those tubercles is surrounded with an irritable secreting capsule, which passes upwards over the spine, and covers every part of the skeleton. The figure before you represents the common echinus esculentus, and you will observe, that at the base of all those exterior spines there is a concave surface which receives the round head of the tubercle. There is here no distinct ligament, either capsular or round, solely appropriated to maintain this joint in conjunction; but the fleshy part which is employed to secrete the calcareous substance itself, and the strong muscular fibres employed to move it, are the parts which serve also as the means of connexion of those parts with each other. There are distinct and strong muscular fibres passing from around the base of the spine to the exterior part of the base of the tubercle. Those radiating muscles move the spine in all directions, and with considerable force, and secure the articulation, so that the animal can raise its whole weight upon those slender spines. In some of the echinida, however, at the base of the spine is a deep depression, with a central perforation, which extends upwards from the concave surface of the articulation, and into that perforation is inserted a round ligament, which passes down, and is inserted into a similar perforation in the head of the subjacent tubercle. That character you observe in these specimens of the *cidaris*; it is, in fact, a distinctive character of their genus; you see them in the *spatangus* also. Here then is an articulation very securely provided with media of connexion by three different modes; yet it is not obvious that any of them are solely designed to hold the joint, to retain the parts in connexion with each other. The exterior layer, or the secreting substance, (which in some does not appear to pass over the whole surface of the spines where the concentric laminæ diverge upwards to the sides of the spines,) in them appears to be destined principally to secrete that central homogeneous part of the spine which sometimes passes upwards through the whole axis; sometimes it is confined to the base in the cidares, where the portion towards the base, which is homogeneous and not laminated, does not grow in the same manner with the portion that is laminated and exterior. They are here connected in this manner chiefly by the muscular fibres. So that there are several means of connexion in these joints of the echinida.

In the *asterida*, also, ligaments are distinctly seen to connect together the moveable segments of the skeleton. These are most apparent in the larger species of the asterias. Some of those parts, however, are distinctly connected also by muscular fibres. The fibres are already distinctly developed; and the muscular system does not here exist in that loose homogeneous state which we find it to present in lower forms of organization.

The enveloping soft parts which have served to connect the solid pieces of the skeleton together in the numerous remarkable *crinoidea*, appear to have been somewhat similar to that secreting flesh which serves to connect the parts of the shells of the echinida. Those innumerable joints meet together generally by flat surfaces, and they were individually moveable to a slight extent. In the plates of the *crinoidea*, as we see from the existing European species, the articulations are not rounded so as to meet each other by ball-and-socket joints, but allow of motions only by the interposed and exterior secreting capsule or general fleshy covering.

In the articulated classes of animals, the parts of the skeleton are held in connexion, not by distinct ligaments passing from one segment or part of the skeleton to another, but by an uncalcified or unconsolidated portion of the general cuticular integument. In the primitive soft conditions of the skeletons of those higher articulated animals, they are analogous to the permanently soft cutaneous skeletons which we see covering the surface of the intestinal worms. There is already sufficient elasticity in these coverings of the worms to admit of the necessary motions without joints; but when this exterior elastic homogeneous integument, so obvious in the *ascaris*, becomes more dense in its texture, we observe that uniform and regular parts of it, —placed at determinate distances, which vary with the species, but which are constant in the same species,—remain permanently soft, and form joints for motion of the trunk. The progress of development in the articulata is often to contract the whole body in length, when it develops in a more marked

degree transversely, or develops appendices. We then perceive that one part of the body passes, or is drawn, within another, presenting thus, in its adult consolidated state, an imbricated appearance. When we attempt to draw those portions of the trunk out in a straight line, we are opposed by the very strong muscles, which have assumed a shorter form, proportioned to the contracted condition of the segments which they were designed to move. But removing those strong muscular fibres we can draw out the whole, and pass from one division smoothly to another, and we find that in this extended state the skeleton has regularly disposed parts, where the calcareous or consolidating matter has not been deposited. These alternate soft rings have been left freely moveable. Taking off those exterior uncalcified portions of the integument, you find no other ligament connecting the joints to each other. The articulations, where they are most distinctly and powerfully developed, as in the legs, are held together not by ligaments but by the structure and forms of the solid parts themselves composing these complex articulations.

We sometimes perceive, especially in the joints of the legs, a ball on the one portion, so surrounded by the contiguous segment of the member, that it admits of free and secure motion, whether we allow the soft uncalcified portion of the skin to remain on the joint or not. This gives great security to the articulations in coleopterous insects and in crustacea, where it is thus solid, but at the same time the direction of motion in those articulations is always extremely limited: they are examples of the ginglymoid articulations, which we see so common in the skeletons of the vertebrata, admitting only of flexion and extension in one direction, like a hinge. We find an approach to this ginglymoid form of articulation even in the helminthoid classes of articulated animals. The portions of the lateral jaws of the rotiferous animals, or wheel-animalcules, move apparently on each other by a similar arrangement, or in one entire piece. In the cirrhopods, as in the entomostraceous crustacea, we observe articulations both in the parts of the skeleton that immediately encompass the body of the contained articulated animal, and in the portion of the exterior calcareous shell itself. The shells that cover this articulated animal are composed of pieces united together by a tough moveable membrane, and which grow, like the tough ligamentous substance, by deposition from a fleshy lining within, analogous to the mantle which we see in most mollusca, so that the ligament corresponds in growth with the growth of the whole exterior skeleton. This we see by comparing the forms of the young with those of the adult animals. It would appear as if there were a solution of continuity between these ligaments and the shells of the anatifa at the period of deposition or excretion of each fresh layer of the connecting epidermic or ligamentous substance. The pieces of the shell are not connected merely by the fleshy secreting mantle. The connecting ligamentous substance is a darker and tougher substance upon the exterior, which appears to be removed or loosened at the margin, both to give place to the fresh layer to be added to the inner surface of these ligaments, and to the fresh layers to be added to the interior of the shell itself. Those parts, which are, in fact, analogous, grow according to the same process as the ligaments of the conchifera grow by, and increase as the bivalve shells to which they are attached grow and increase. They increase alike, by the deposition of layer after layer to their inner surfaces, and the last deposited or newest layers of the ligaments have always more softness and elasticity than the older stiff decayed layers, which generally exfoliate and wear away. In the *annelida*, where the segments not only of the trunk, but in some also of the legs, are becoming consolidated, the distinction between them and the intervening, connecting, unconsolidated, ligamentous portion of the cuticle, is already seen; and, indeed, the simplest form of ligaments consists only of a modification of the excreted superficial epidermis, or of the cutis, or of the general cellular tissue of the body, the skeleton in the lower tribes consisting of mineral matter deposited on the surface, and, in the higher classes, of the same mineral matter, deposited in the interior of the cellular tissue of the body.

This mode of connexion between the denser parts in the helminthoid articulata, is seen also in the *myriapods*, in the *insecta*, in the *arachnida*, and in the *crustacea*; for all those vary only, in regard to their ligamentous connexions, in the density of the substances composing the skeleton, and the forms of the various articulations. The intermediate part of that integument retains the same soft, flexible, elastic character. This mode of articulation you perceive not only connects the parts that envelop the trunk of the body, but it serves also to connect the separate rings which encompass the appendices. Even the antennæ themselves are surrounded by rings which move upon each other by an uncalcified portion of the epidermic integument. In throwing off the shells, those animals throw off this exte-

rior soft connecting uncalcified layer, and which assists, indeed, by its rapid decay, in breaking asunder those constricted portions which the animals have sometimes such difficulty in extricating themselves from.

In the molluscous classes of animals the skeleton is frequently composed of a single piece, and in that case there is no necessity for any kind of ligament; there is no ligament connecting the body of the animal to the shell. But where the shell is divided, as in the bivalves and multivalves, we observe parts connecting those calcareous pieces together, which are compared to ligament. They appear to have an origin similar to that of the so-named epidermis, and to that barbed filamentous covering which we see frequently extending from the surface of the shells of the molluscous classes. We see, in many of these barbed shells, at the terminations of all the successive layers, that there are tough filaments left projecting from the surface of the shell, which themselves contain no calcareous matter, but only the excreted tough animal matter that pervades all the solid texture of the shell; that they consist solely of that exuded animal matter separate from the calcareous. It is this which forms also the exterior varnish called commonly the epidermis, for there is obviously no other means of its formation or extension over the surface of the bivalved shells, but by having such an origin and such a mode of growth. The ligaments which connect the valves together have a similar origin, composition, and mode of growth. They are exuded from the surface of the mantle, the exterior fleshy, secreting, enveloping, substance of the body of the enclosed animal, as is also the shell itself; but all the consolidated part of the general exudation, to be employed for the protection of the body, is strengthened by a copious deposition of calcareous matter. Numerous species of the molluscous classes have no calcareous matter at all in their whole body; the ligament is only an uncalcified portion of the epidermis. Those expanded, soft, elastic substances, which we see forming tufts, or barbs, or bristles, on the surface of shells, are formed, like the shell itself, by exudations from the surface of the mantle, layer after layer.

In the multivalves, such as we see in the chitons, the pholades, and several others, the exterior of the body is covered with calcareous shells, which are constantly growing, according to the growth of the body; and those solid pieces, as well as their connecting ligaments, grow by deposition of layer after layer on the interior surface. They are connected together—the eight pieces of the chitons, for example, that cover the body from before backwards—these transverse plates covering them across from right to left, are connected together by a tough extravascular coriaceous substance, which is secreted from the exterior of the fleshy mantle, in the same manner as the shells themselves. They consist merely of portions of that dense coagulated albuminous or tough elastic animal matter, which permeates and serves to consolidate the whole texture of these shells. In the *tunicata*, this exterior matter serves to fix the tunic to rocks and other substances, or to fix portions of gravel and shells to the surface of the animal, for concealment. In the *conchifera* the ligament ties the valves together, and by its elasticity tends to force them open, and is thus the antagonist power to the adductor muscles of the valves. The ligamentous threads forming the byssus, to connect the more exposed or the more delicate bivalves to rocks, are secreted in a fluid state by a gland at the base of the foot, and the grooved foot conveys that secretion outwards to be fixed on the extraneous body, and to be consolidated by the influence of the surrounding element—the sea. The operculum of most of the *gasteropoda* is of a horny or albuminous nature, and is formed by a deposition of successive layers, from the fleshy substance of the foot to which it adheres, as the retractor muscle adheres to the columella of the shell. From the mode of attachment of the semicircular opercula of the nerites to the foot, they appear as if they were articulated to the lip of the shell. The epiphragma, by which the aperture of the helices is, during the winter, plastered over, adheres not to the foot but to the shell, as it is without motion or articulation. There is no operculum or articulated pieces in the shells of *pteropoda* or of *cephalopoda*. The whole shells of the pteropods are thin, elastic, and transparent, and almost destitute of lime, as in the delicate shells of the minutest existing testaceous cephalopods, and the pieces of the internal organized skeleton of the cephalopods are connected together by their thin, soft, cartilaginous margins prolonged,—the simplest mode of union which we see in the embryo condition of the elements of the human cranial, and all other bones of the skeleton. The vertebral column, as developed in the cephalopods, is so thin, soft, and flexible, as to require no divisions or articulations, or transverse separations requiring ligaments to tie them together. Their strong mandibles are connected by the powerful

muscles inserted into them for their motions.

In the lowest of the cartilaginous fishes, also by the soft texture of the general skeleton, sufficient motion is allowed in all the parts without the interposition of joints. There are, therefore, almost no ligaments perceived in those skeletons. Where, however, they become sufficiently consolidated, then we perceive ligaments connecting the solid parts together, which must admit of motion upon each other, especially in the jaws and the members for progressive motion, the various fins. The ligaments connecting the vertebræ of the osseous fishes are white, fibrous, and dense in their texture in the living state. They are highly elastic and strong, and we observe, that when the vertebral column is bent forcibly by the exertion of all the muscles which are disposed in strata upon one side of the body, the vertebral ligaments assist in bringing the vertebral column forcibly back to a straight line by this property of elasticity. The articulations of the cranial bones of fishes are, for the most part, by squamous modes of union. The plates composing the head meet each other, pass each other, and continue to grow freely by all their edges through life. They admit, also, of motion upon each other in many parts in the heads of fishes, where the bones are afterwards consolidated together, immoveably, in higher classes of vertebrata. We have seen that the intermaxillary bones, and the upper jaw bones, and the palatine bones, admit of very extensive motion, and these are connected together by pretty dense fibro-cartilaginous membranes, besides their muscular attachments. The ligaments generally, however, are of a softer consistence than in the higher vertebrata. We perceive the effect of hot water in dissolving all the ligamentous connexions of the bones in fishes, to be much more rapid than in the articulations of any of the higher classes. The elasticity even of the bones of osseous fishes allows of some motion in parts without distinct joints. We have few examples of ball and socket-joints with synovial capsules, or of other complex forms of articulations in fishes. The bones that are moveable upon each other, as in the extremities generally, are connected to each other by a tough cartilaginous substance interposed between and connected around the extremities of the joints. It has scarcely yet assumed the form of a dense fibro-cartilaginous substance; that appears to be a form of the connecting ligaments developed chiefly in higher vertebrated animals, and is the most common connecting substance in the highest animals.

The interposed tough, elastic, fibro-cartilaginous substance, which we find between the bodies of most of the vertebræ in quadrupeds, we find to be substituted in the cold-blooded oviparous reptiles, by distinct moveable articulations or enarthroses between the bodies of the vertebræ themselves, which play freely on each other. This is the case with all the orders of reptiles; it is the case also with the vertebræ of birds, particularly in the region of the neck. It is even the case with the adult anurous amphibious animals; but in the fishes the interposed substance of the vertebral column consists of a semi-fluid substance, tenaceous, and contained in a very dense capsule, which it fills to a considerable degree of tenseness. This separates, by its convexity, the hollow bodies of the vertebræ, a little from each other, so that they possess a great degree of pliancy and elasticity between the component vertebræ of the column. From the tenseness, elasticity, and smooth convexity of these interposed balls, a much greater degree of pliability and extent of motion is given to the whole vertebral column than where the flat bodies are fixed to each other by an interposed, elastic, fibro-cartilage, as in mammalia; or ball and socket articulations, as in reptiles. And this fish-like form of the intervertebral articulations is seen in the perennibranchiate amphibia, which, however, are well known to have a tripartite heart, as the adults of the anurous species. This pliable but feeble form of these articulations belonged also to the huge fish-like *ichthyosauri*, but is not adapted for land forms of vertebrata. These articulations in the tadpoles are metamorphosed gradually by the ossification and anchylosis of the interposed elastic substance, originally filling the two cup-like cavities. More perfect sutures and firmer articulations are established in the cranial bones of the amphibia than in fishes, especially in the bones immediately encompassing the brain. There is no interarticular cartilage in the articulation of the lower jaw, nor ligamentum teres in that of the thigh-bone, but the heads of the long bones are already covered with smooth cartilage, are lubricated with synovia, and are surrounded with strong capsular ligaments.

In the reptiles we already observe most of those complex forms of the articulations which are most commonly and most perfectly developed in the mammalia. The capsular ligaments here serve by their greater strength and elasticity, and by their exterior ligamentous bands, to connect the joints where many of the interposed cartilages and ligaments within the joints, which are used to perfect, to

strengthen, and to protect the articulations of warm-blooded animals, are still wanting. The vertebræ still unite by *enarthrosis*; their articular processes have their synovial capsules, and their spinous processes are connected by their interspinal ligaments. The lower jaw is without interarticular cartilage, and the teeth in the more elevated species are articulated by complete gomphosis. The articular cavities are less deepened by cartilaginous margins, the internal loose cartilages of the joints are more rare, the exterior ligamentous bands are more simple in their arrangements, and there are fewer immoveable synarthroses in the skeletons of reptiles than of birds and mammalia.

In the class of birds where the articulations generally admit of much greater extent of motion, especially in all the bones of the neck and the extremities, we observe the capsular ligaments to be of a very dense texture, thin in their parietes, and that they are lubricated internally by a very copious secretion of synovia. It is greater here in quantity than we find this oily secretion to be in any other class; greater than it is even in the mammalia. This is obviously required in birds on account of the high temperature of their body; on account of the rapid consumption of that oily material in the violent and long-continued motions of the joints. Most of the sutures of the head have disappeared by early anchylosis, but each end of the tympanic bone is enveloped with a synovial capsule, and most of the vertebræ throughout the column have their bodies united by most moveable and secure enarthroses. From there being less pressure exerted upon the joints in birds, than what is observed in the more bulky mammalia, we perceive less of that cartilaginous elastic covering of the ends of the long bones which meet each other, than we see in the massive joints of quadrupeds. From the comparative smallness and lightness of the head of oviparous animals generally, whether cold or warm-blooded, we do not find those strong ligaments which we observe in the mammalia, passing down from the protuberance of the occipital bone, to be attached along the spinous processes of the dorsal vertebræ, and throughout nearly the whole of the vertebral column. These ligaments of support are but small in birds compared with those of the mammalia. The mammalia themselves differ very much in the strength of those ligaments, from the great difference in the weight of the head which they have to support.

In the articulations of the bones of quadrupeds, we observe the greatest variety in the texture and properties of the connecting ligaments and cartilages, the most perfect adjustment of these to limit and direct the intended movement of each part, and the greatest differences, according to the various living habits of the species. The thick, elastic layer of fibro-cartilage interposed between the flat bodies of the vertebræ, is the mode of articulation which best corresponds with the strong, limited, and slow motions required in that region of the skeleton. The form and structure of the articulations vary in the herbivorous and carnivorous species. The heavy-headed herbivorous quadrupeds have the ligamentum nuchæ, which is so small in the human body, of great size and strength, extending from the occipital protuberance along the spinous processes of the dorsal and all the succeeding vertebræ, to the coccygeal; but in the light-headed muscular carnivorous animals that ligament is very small, and generally extends forwards, only to be attached to the large spinous process of the second cervical vertebra or axis. In the large proboscidian pachyderma, and powerful-horned ruminantia, this ligament is very strong and elastic, and is attached to the enlarged rounded ends of the spinous processes of the dorsal vertebræ. In the extremities of herbivorous quadrupeds, where limited and secure articulations are required, the capsular ligaments of the joints are less elastic and loose than in the carnivora, where greater freedom and extent of motion are required, and greater force of action. In the feet of the ruminantia we observe very strong transverse ligaments passing from the one penultimate phalanx to the other, to prevent the tearing of the two toes asunder during their bounding and rapid movements, which are not compatible with the movements of the toes of the carnivorous species. In the slow-moving pillars of the elephant, the rhinoceros, and the hippopotamus, we find no *ligamentum teres* to attach the head of the femur to the bottom of the cotyloid cavity, nor do we find it in the kangaroo, the sloths, or the monotrema, nor in the sedate orangs, or the chimpanze, which so much approach the human form.

MILK-DIET.—The diet of man should be so varied, that it may yield all the elementary principles which form the human frame. Milk alone, and no other aliment, contains all the elementary principles required for the restoration of the waste, nourishment, and health, of the human body.—*Cameron's New Theory of Diet.*

ANATOMY AND PHYSIOLOGY.

LECTURES

ILLUSTRATED BY THE

HUNTERIAN PREPARATIONS

IN THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS, LONDON.

Delivered at the College in 1833, *by*

SIR CHARLES BELL, K.G.H., F.R.S.

LECTURE VI.

THE TEETH.

Gentlemen, when we recollect how much Mr. Hunter attended to the subject of the teeth, you will see at once that this is a topic over which I could not pass in these lectures, though, from the difficulty of treating it, I should be well pleased to omit it altogether. Some may conceive that this is a trifling subject, but it is an item in my brief to show you that such is not the case, and that some of the most important questions in physiology are connected with and arise out of its consideration.

For example: Are the teeth similar to the rest of the bones? Do they form part of the skeleton? Do they, indeed, consist of bone? Are they vascular? Are they subject to change, to absorption, and to growth? Are they alive, or how are those various changes produced which occur in them, and in the alveolar processes which support them?

There are other views, besides those of their structure, which I might take up. They are instruments curiously formed, and admirably adapted to various offices. I need not mention their use in the human subject as instruments of speech and mastication. Their functions in animals are very various. Carnivorous animals use them for tearing; in the grammivorous they become instruments of attrition; in the walruses they rather favour locomotion than anything else; it is imagined that the walrus employs his fangs to mount icebergs and rocks; in other respects this is an animal which moves with great difficulty and awkwardness. In the sus æthiopicus they assume a total change of form, and are more like the tooth of the hog, of great strength, rising from the mouth, one fang supporting another, and indicating more than ordinary power of the jaw, their use being twofold, — for rooting up vegetable food, and acting as an instrument of defence, so that it is equal to combat with the lion. In dogs, again, the whole of the teeth take a new form. In the babyrussa you see the teeth for defence actually approaching the eyes, so bent, that the animal may reach its abode in journeys through the underwood of forests, without injury to the organs of sight. In short, the teeth perform a great variety of offices, and occupy a great variety of places in the head. Teeth, or those organs which perform the functions of teeth, are ranged behind the jaw, on the tongue, and in the stomach. They sometimes, like wires, hold the prey to prevent its retrocession; the hyena cracks strong bones with them, and with them the walrus breaks shells.

These various adaptations correspond with the design of the whole skeleton, and thus the teeth are intimately connected with the strength of the animal, and are indexes to its disposition. If, on the other hand, the disposition be observed, it will be found that the teeth of any animal are the precise instruments wanted by it,— thus becoming as appropriate tools as the instrument of the carpenter, the joiner, the smith, or the brazier, is to those several workmen.

Looking, as I am bound to do, to the arrangement formed by Mr. Hunter on the shelves of his museum, I find something yet more difficult of consideration than the teeth, at the very threshold. Previous to the teeth, the bills of birds are placed by him, according to their different purposes of bruising and tearing. They are so arranged, also, as to indicate that Mr. Hunter studied the bill, both in relation to the external covering of the animal and its internal function. We here obviously find, that as in the bill there is no proper organ of attrition or bruising, we must look for the performance of that function in the stomach; that is, the bird picks up materials which it deposits in the stomach, there to form, as it were, teeth, which, though loose and foreign, are yet under the action of the muscles and membrane of the stomach, causing the food to undergo, by their means, such processes as, under other circumstances, are performed by the jaw. The bill also has a relation to the covering of the bird, for we cannot imagine the existence of the best of all coats, unless there be a means of keeping it in order,— a bill to dress the plumage. That the bill has such a function, obviously passed through the mind of Mr. Hunter, when placing the several preparations before us in his museum. He has in this department, also, been reflecting on other similar subjects of interest, but of great difficulty. I am disposed to skip some of them, but my conscience twits me when,

for instance, I attempt to pass over the pterodactylus, unexplained and unaccounted for. No wonder, however, that I should be anxious to omit it, though connected with our subject. I would fain shrink from it, if possible, for these reasons. It is an animal which is found with the saurian reptiles in the lias rock, and is like no creature alive. Neither the skeleton nor the bill, which I now present to you, throws much light upon it. The great length of the neck and the bill would place it amongst the birds, but you see nothing like the skeleton of the bird in the little body; there is no such expansion of the breast-bone, not that firmness of the spine, that elevation of the pelvis, which indicate that it was an animal of flight. All we see indicating powers of flight, is an extraordinary development of the anterior extremities, and the bones of the head. In this respect, however, it may be said to resemble the bat. Here is a beautiful preparation of the bat, and I will here notice into what an error we are likely to fall when, on considering its skeleton, notwithstanding the development of the clavicle, the scapula, and the bones of the extremities, we allow ourselves to say that the bat is a failure. We may think that it is not duly proportioned, that it is not prepared for flying like a bird, and yet that it has wings for flight. We must not consider, that, by comparison, it is a failure, for we have left out this material consideration, that the bat is formed for flying under circumstances in which the senses are deficient, where it is neither directed by sight nor by hearing. It should be constituted with regard to its bone as a bird, but if it had feathers it could not fly, because the wings must form organs of sensation. This is beautifully displayed in the preparation before us. A nervous development is seen extending throughout a membranous wing, giving it either a new property, or a new sense, or such an exquisite degree of sensibility, that the animal is aware, by means of the effect of the atmosphere on its wings, when it approaches a solid body. Thus, it can fly and feed, even though the eyes be darkened and the ears stopped. It roosts in old houses. How careful we should be when employing a critical eye to discover imperfections of structure!

Reverting to the pterodactyle. Observe the bill. The jaw exhibits the teeth of a saurian reptile. Now we remarked that feathers indicate a bill to dress and trim them. There were no feathers here, and therefore the extraordinary extension of the extremities was, in all probability, for the expansion of wings like those of the bat. But another extraordinary circumstance is this, that the extension is that of the humerus and the bones of the fore-arm, while the phalanges of the fingers, which are the principal parts expanded in the bat, possessed altogether another office, having no strong claws attached to them. Upon the whole, therefore, we might surmise, that the animal was not, strictly, capable of flying, but skimmed till it escaped from the pursuing animal, dropping so as to vary its direction, and turning, perhaps, in the atmosphere, when in the act of dropping. A curious office is given to the ribs, assisting to form something like a parachute; the skin on the extremities was expanded, so that the creature might have been carried to such a height as to enable it to escape from an enemy, and then probably fell to the ground, not heavily, but in such a manner that it might alight safely. All these points must be considered before we can understand this animal, and say whether it is most like a bird, or a bat, or a saurian reptile. It is, upon the whole, an extraordinary and inexplicable creature, and if I have satisfied you but little on the subject I have given you some reason for my being well pleased to leave it out altogether.

To return to the subject of the teeth, as a separate inquiry. A tooth presents three different substances, existing in different proportions,—phosphate of lime, carbonate of lime, and fluate of lime. It is on the latter especially that the great hardness depends, at least the hardness and glassy fracture of the enamel. If we look to the tooth, however, not as chemists but as anatomists, we shall find another remarkable difference between it and bone. I was careful to explain that bone must possess membranes and vessels entering it; that it was alive, and subject to all the changes incidental to living parts; but the tooth has no such pores or membranes. Maceration in acid does not remove lime, and leave membranes and vessels. I formerly mentioned the fact of madder staining bone; but it does not stain the teeth, implying that vessels do not enter them, and that there is no circulation of blood in them, although you must suppose that that fluid would more readily pass into its parts than any imitation of circulation by anatomical infiltration. There is no proof of anything of the kind permeating the tooth.

Again, the tooth does not change when the bones change. The bones become soft in mollities ossium, but there is no change in the teeth; neither is there any change in them during disease of the joints, unless (I beg you to remember that circumstance) the tooth is forming at the period when a patient is labouring under rickets

or a diseased constitution, and then you find remarkable defects in them. Again, is a tooth sensible? No. We cannot imagine the existence of sensibility in a part which is not vascular. But although the tooth is not sensible, it is guarded against danger, for I was particular to notice that sensibility was given to a part as a guard, and so is there a similar provision here. The sensibility resides in the membranes within, brought into play by the nerve of the tooth, and not in the tooth itself. Analogous to this is the case of the hoof, which, in one meaning of the term, is not sensible; yet every vibration of the hoof, every impulse given to it, conveys a sensation to the horse. When the crust or hoof is peeled off, we find certain processes in the foot, vascular extremities and nerves, so that the hoof though not sensible itself, receives an impulse or vibration which is conveyed to the end of the nerve, and the horse feels the ground just as you feel what is between the teeth. You know when there is a slight particle of sand between the teeth how rapidly the vibration reaches the nerve, and we cannot but admire the manner in which nature fulfils that purpose. However thick the sole of the foot or the cuticle, the man whose hands are coarse, and covered as if with a glove, is not, therefore, as insensible as if he really had on a glove. No. Nature so introduces the nerve into the cuticle, that the hand and foot retain their sensibility, and give the sense of touch in the one instance and of pressure in the other.

I would follow up this subject, though it is not directly connected with the teeth, by referring to the necessity of performing the operation of neurotomy in horses. When a horse's foot, by much percussion, becomes inflamed, the sensibility is increased, and the animal does not put its foot to the ground. We have here another application of the great principle of Mr. HUNTER. The foot is not put to its use, and, accordingly, degenerates in all its fine apparatus. The elasticity of the foot and the limb, the play of the bones, and all which we admire in the functions of the foot, is gradually degenerating from the want of use, of pressure, of superincumbent weight, which is necessary for expanding the elastic parts, so that it becomes dead, from degeneration. Under these circumstances, Mr. SEWELL has divided the nerve of sensation in the substance of the foot, leaving the nerves of motion sound; the animal then puts down its foot, bears its weight upon it, and seems perfectly restored. He states, that in such a case the creature bears freely upon its foot, though you will allow that a perfect cure cannot thus be effected, inasmuch as the proper sensibility of the foot is gone, and the animal cannot, therefore, be considered as a safe goer.*

So in the tooth, the sensibility does not lie in the substance of the tooth, but in the nerve within; and from the ready manner in which every variation of temperature and the slightest rub is felt, through the tooth, by the nerve, all the purposes of sensibility in the hard material are served. But when the fifth pair, which gives sensibility to the tooth, is destroyed at the root, the want of feeling in that portion of the tooth which is supplied by the nerve is felt, and an annoying insensibility in the tooth itself is experienced, the patient not using his teeth, because he is not aware when any substance is in their grasp.

The sensibility of the tooth is a matter of importance, not merely as regards the toothach, but in operations on the teeth. That of pivoting is often a process of great niccty. The crown of the tooth is taken off, and the artist removes the nerve from the canal; but if he attempt to pivot the

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* The following case, related by Mr. W. Simpson, V.S., of Southampton, occurs in the *Veterinarian* for the present month (May), and possesses some points of sufficient interest to induce us to append it as a note in this place:—"NEUROTOMY.—Dec. 18, 1833. A very old but splendid bay horse, belonging to — Lamprey, Esq., has been very lame in the off forefoot for some months. Endless plans of treatment have been adopted with him, but all have proved useless. To-day I was consulted about him, and as it was pretty clear that the day for setting him right had gone by, I recommended neurotomy. This was acceded to, and the horse was ordered to undergo proper preparation.—20th. A portion of the metacarpal nerve was excised on both sides, just above the fetlock.—March 14th, 1834. The horse, being quite free from lameness, was put in harness, and driven about twelve miles. He appeared to go very well, but, on arriving at his journey's end, it was found that the off hind hoof was covered with blood, and the heels of the neurotomised foot were dreadfully bruised and cut, by repeated blows from the corresponding foot behind. To remedy this, the toe of the hind foot was ordered to be shortened as much as possible.—18th. He was driven again to-day, but without the least diminution of the unpleasant and dangerous contusions, although he does not appear to feel the slightest pain either at the time the blows are inflicted, or when pressed upon and examined afterwards. Being nearly twenty years old, Mr. Lamprey decided to destroy him, rather than be at any further trouble concerning him. This is a consequence of neurotomy which was certainly altogether unlooked for by me; but it is clearly caused by that operation; because previous to its performance there was not the slightest disposition to anything of the kind, although the patient always had a lumbering way of going. It appears there was not the same activity in the affected foot as before the operation. It could not get out of the way of the hind foot. Yet this is a thing which one would not expect, because, although sensation in the foot is destroyed, still the locomotive powers of the leg are unimpaired. This is certainly an objection against neurotomy, but it ought not to deter practitioners from resorting to it, because the possibility of a consequence like this is distant."

tooth without taking out the nerve, excessive pain is produced, excitement of the nervous system follows, and there is no saying to what extent the disorder of the whole frame may arise.

Is, then, the tooth alive? If an artificial tooth be placed in the jaw, the gum shrinks, the alveolar process shrinks away from it; it will not adhere to the new object. But the natural tooth adheres to the surrounding parts. By what process? because we understand that adhesion is produced by the sympathy which exists between the two surfaces. Is there such sympathy in the tooth and jaw? If it adhere, you must at once say that it possesses life. Here arises a difficult question, for we have hitherto considered life as resulting immediately from the circulating system. But we have concluded that there is no circulation in the tooth. How comes there then to be a property of life in it? Are there any other palpable instances in which there seems to be the property of life without circulation? Yes. The egg has life, and maintains it without circulation. Seed may be gathered into the botanist's scrutoire, and, after fifty years, if put into the ground, will germinate. Seed placed beyond the influence of heat, and moisture, and atmospheric influence, after a hundred years will germinate. It only remains for us to believe, then, that there is life in the substance of the tooth—to such an extent, at least, that it shall possess a sympathy with the soft gum or the alveolar process, and not be inclined to suffer ulceration, or abscess, or experience any other mode of being thrown off as a foreign body.

The alveolar processes form the next point for our attention. I do not pretend to demonstrate the parts I lay before you; I wish I could do so; I wish there was some moment of pause for a deeper consideration of the subject, but, situated as I am, I can only complain, as Mr. Abernethy was wont to complain, that we have not the means of demonstration. In the absence of this, I refer you to the acknowledged fact, that the alveolar process is altogether different from the rest of the jaw. It is not in existence while the teeth are not yet formed. It grows, wastes, and decays, with the teeth. The fact that there exists a part of the jaw thus connected with the constitution of the teeth, removes our surprise at the variations and position of the alveolar processes coinciding with the changes of the teeth. Recollect this very ingenious and curious remark of Mr. Hunter, that the sockets of the teeth are provided for pressure. The remark seems a simple one; but suppose they were not so provided, and that the muscles of the jaw, by their action, were perpetually driving the teeth with their unyielding crowns, by pressure, one row against the other, like a hammer driving a pin or a nail into the jaw. Would they not by this means penetrate deeper? Certainly they would. But there is a process by which the tooth is always pushed up from the jaw in exact proportion as it is pressed down, and thus the two powers counteract each other. Almost every person may find in his own mouth a proof of this, for as sure as pressure is taken off the tooth, so sure does it seem to grow; it gets above the level. In reality, however, it is not growing; the sensation is merely the effect of this property of elevation in the alveolar process. And not only is there a continual pressure upwards against that of mastication, but if one tooth fall out, the alveolar process occupies its room in that direction. Just as certainly as soldiers on parade will, by order, take room right or left, so sure will a tooth, if one be wanting in the front in the early period of life, gradually incline to fill up the vacant place. Before we had such absolute and excellent *proofs* of a change going on in all the bones of the body, it was an acknowledged truth that there was a continual absorption and deposition of bone, for without this consideration it was impossible to explain how the teeth could change their place, and still be held by the proper sockets of the jaw.

You know well that the gum at first is a substitute for the teeth. Before the teeth arise there is a ridge upon the gums, which, in the infant, is a substitute for the teeth. When the teeth arise, that ridge is of course absorbed, and the gum becomes soft, for the admirable purpose of taking off the unpleasant effect of bony contact. When a tooth comes out the gum falls away, and the portion of bone belonging to it is absorbed, so that in an old jaw, where the teeth are gone, you find that the alveolar processes are also gone. Nature supplies a substitute for the teeth in a certain hardness produced by mastication. I am now about to press on your attention a most important consideration, that is, that these three parts, the teeth, the alveolar processes, and the gum, are one in natural constitution, and, consequently, one in disease. When tumours arise by the side of the teeth, you will do well to recollect, that unless in removing the tumour you also take away tooth, gum, and alveolar process, you leave parts which are disposed to renew the disease, and you do not, in effect, eradicate the tumour. These facts enable us, in reviewing the chief circumstances attending the

formation of the teeth, to discover the real distinction between a tooth and a bone. Before the tooth is formed, there is, deep in the jaw, a little sacculus, surrounded and protected by the jaw and alveolar process. On opening this sac and folding it back, what is called the *pulp* of the tooth is found. If this be done at a little later period, the ivory of the tooth is seen deposited. The pulp is a gland which secretes the tooth, and the tooth, therefore, is, as it were, cast. The pulp afterwards diminishes more and more, and occupies a lesser space in the substance of the tooth. When, however, the tooth is nearly formed, and especially when the crown of the tooth is formed, an extreme bag surrounding the part begins to secrete the enamel of the tooth. Thus the central part of the tooth, the bone, as we may call it, or, more properly, the ivory, is formed by the pulp, and the enamel, the harder material, is formed by an external sac. One thing that we must admire in the teeth, is the perfect regularity which exists amongst these sacculæ. On looking into the jaw, you observe one little body possessing no vascularity whatever, another enlarged, and a third highly vascular. This is that from which the tooth is formed, and thus the teeth arise in succession, and nothing can be more admirable than the order in which they are found when the child is in its natural health.

The formation and structure of teeth was a source of laborious contemplation to Mr. Hunter, whose mind, great as it was, yet could readily descend to such minutiæ. Yet, without this power and disposition to descend to minutiæ, of what value is a man's mind? We are bound to be minute in our studies, and have here a precedent for it worthy of imitation. Let us examine further into these minutiæ of the teeth. Here is a provision for a double set. Why is it made? Why, because, as I have already said, the tooth does not change. It does not grow like bone, and an adult tooth in an infant would be preposterous. There are two sets of teeth, twenty-four deciduous or milk teeth, and thirty-two adult teeth, the latter adapted for the large jaw of man. In pursuing this subject, it is material to learn, first of all, the cause of the falling out of the early teeth. To a superficial observer it would appear that the teeth of the adult pushed out those of the infant; but that is not the fact. On narrow inspection, it will be found that a curious relation subsists between the condition of the deciduous tooth, and that which is to take its place. The deciduous tooth wastes at its fang, but not in consequence of the pressure of the crown of the tooth that is coming after it. A membrane exists at that part which wastes, like other soft matter, and then the tooth also wastes, and the wasting of the one tooth proceeds while the other grows. We can readily imagine the activity which causes a development of parts; but here you see, as it were, two distinct portions brought forth on the same stock, the same tendril, by the same vessels, one growing and another decaying,—decaying, too, very early in life, and in a manner by which we feel no pain,—decaying in the natural course of things.

This originates a curious inquiry—What should cause the wasting of the tooth? It is not caries, it is not wasting or dissolving from without; it is not the operation of absorption. What is the law, or where, or how, is the law impressed, by which the one tooth wastes while the other is maturing? It would appear that the teeth show, in this respect, other properties of life. The chemist can find nothing in the tooth of an infant different from that of an adult. What is it then, since it is not in the material, which produces imperfection, waste, or, if you will, old age, in the deciduous tooth, and not in the other? Why, in short, should the tooth of the one be adapted to last but for a very few years, and the other for threescore and ten? It is not in the material, it is not in the workmanship (permit the expression), but the circumstance affords another instance, as it appears to me, of a law of life impressed on the part, ordaining it to last for a certain time, and decay in a certain time. This view seems to be supported by what I formerly incidentally advanced relative the growth of all parts of the skeleton according to a certain especial law—if not in a regular succession—not necessarily proceeding according to their proximity to the heart, for in the fœtus, they pursue a different course from what they do in the adult. If then you find certain bones in a state of infancy while others are mature—if you find certain parts decaying when they are four years old, and others not until they are sixty, you look abroad for other analogous instances, and discover that there are various organs of the body which, if I may so speak, are young, arrive at maturity, decay, and suffer old age, while the whole body is uniformly progressing. For example, take a gland, a mamma—Why does it not reach perfection, say for fifteen years? Why does it subsequently become weak, old, wasted, and absorbed, while the system is as yet entire, and in health? Reflection on these facts has led me to infer that a law of life is impressed on the tooth of the infant as well as on that of

the adult, and that the adaptation of the tooth to its situation and functions does not so much consist in, or is not derived from, the proper texture of the tooth, from the manufacture, as it were, of the tooth, as in the circumstance that there is a peculiar life in the tooth. The life is adapted in the one instance for the jaw of the infant, in the other for that of the adult.

There is another subject to be considered before we can speak of particular teeth, or take a comparative view of them,—one curious in itself, and of general interest. I mean the irritation, fever, distress, and convulsions, occasioned by teething. Now, we find at one period an extraordinary number of teeth in the jaw.—the twenty-four deciduous and milk-teeth, and the rudiments of all that are to succeed them, so that up to the cutting of the dentes sapientiæ, when you may suppose that no more rudiments exist, you have fifty-two teeth in different states or conditions, some perfect, some faded, and some coming forward in every possible variety of condition, till the period of eight years of age. No disease arises from or is produced by the irritation of the teeth; but at the period of weaning the child, when the teeth rise above the gums, there is sometimes extraordinary distress. If the child be in perfect health, there is no convulsion, inflammation, or fever; but if the child be puny and weak, nay, more than that, if it have some peculiar irritability of constitution which it is not possible to distinguish by the eye, or perhaps to distinguish at all by symptoms, the teething produces extraordinary irritation, the most formidable symptoms, and sometimes death itself. Is this the effect of the rising of the tooth from the gum? Many gentlemen are before me who know that when the tooth is rising, if there be inflammation and irritation, the slightest touch of the lancet will act like a charm on the patient, and at once remove the irritation. But why is this irritation produced at the particular period when the tooth is rising from the gum? A variety of circumstances may be referred to in illustration of this point. Do you not in dissecting often find an abscess situated deep in the body, which you never dreamed of discovering there? All the processes of inflammation, for the production of matter, for the formation of a sac, had been going on in the patient, without being manifested by a symptom, without fever, without irritation,—yet if an abscess make progress towards the surface, the event is immediately attended with shivering, fever, irritation, pain. You know full well that an internal abscess is not attended with symptoms, whereas, if it reach the skin, irritation is produced. Take another instance; that of a ball, for example, which has been shot into a man's body. The bullet lies deep in the loins, and there remains without producing irritation; indeed, the sac which forms will exist for ten or fifteen years without giving rise to any symptoms; but when, at length, by slow degrees, the ball drops down, or, by the process of ulceration, comes to the surface, then pain, inflammation, fever, and all manner of evils, ensue. So in a gland, if suppuration occur, and the gland be seated immediately under the skin, you have a bubo; but if it be seated deeply the patient does not complain of anything.

These facts throw light upon the phenomena of the teeth. The teeth may proceed in their course, gradually rise to the surface, and absorption of one part and formation of another may take place, the wedge below rising to its proper place, without symptoms, until the moment that it is about to penetrate the skin and arise from the gum. This superficial cutaneous part is more sensible than the internal substance, and now the process of ulceration and absorption becomes a source of irritation; but not in all cases—not necessarily—though it is always a source of irritation in a certain condition of the system. But though actual disease in the patient is not evinced by symptoms, yet a proneness to disease and a liability to excitement may exist, which is made manifest by the irritation of teething. Such are the views which are impressed on us by attending to the different facts which Mr. Hunter has placed before us.

We now approach another division of the subject, and this I shall take up not according to the system of natural history, but as an anatomist, beginning with the classification of the teeth in man, and comparing them with those of other animals. The teeth consist of incisores, or cutting teeth; cuspidati, or canine teeth; and molares, or grinders. It would, however, be scarcely respectful of me now to enter on a fresh branch of the subject when I hear the clock striking, and therefore with your permission I will retire until the next hour of lecture.

LITHOTRITY.—Mr. Liston, of Edinburgh, in March performed lithotrity on Mr. Irving, draper, of Dumfries, with a successful result, and, according to the patient's own account, says the *Dumfries Courier*, "with a wonderful absence of pain."

HOTEL DIEU, PARIS.

CLINICAL LECTURES ON SURGERY

DELIVERED BY

BARON DUPUYTREN,

During the Session of 1833.

Revised (before translation) by the Baron himself in the fasciculi of his "Leçons Orales de Clinique Chirurgicale," published periodically by G. Baillière, Paris.

PERMANENT RETRACTION OF THE FINGERS, PRODUCED BY AN AFFECTION OF THE PALMAR FASCIA.

RETRACTION of the fingers, Gentlemen, and particularly that of the ring-finger, has been observed for many years, but it was only very lately that the cause of this deformity has been investigated with success. If we consider the multitude of reasons assigned as a cause of this disease, the quantity of remedies proposed for its cure, and the various hypotheses put forth on its origin, it is not surprising that many surgeons should have regarded it as incurable. Authors have spoken in a very incomplete manner upon this subject. Boyer, in his treatise on surgical diseases, has given to it a few words under the name of *eripatura tendinum*. Perhaps those who have more leisure may find some description of it in authors; if this be the case, I shall be happy to learn that those who have preceded me have discovered the cause and means of cure.*

It has at different times been attributed to a rheumatismal affection, to gout, some external violence, a fracture, or the metastasis of some morbific cause, as we occasionally find in cases of inflammation of the sheaths or tendons of the flexor muscles; we shall see presently on what little foundation these pretended causes rest. The greater number of individuals affected by this disease have been obliged to make efforts with the palm of the hand, or frequently to handle hard bodies. Thus the wine-merchant and coachman of whom we shall presently speak were obliged, the one to perforate continually the casks with a gimlet, the other to ply his whip unceasingly on the backs of his jaded horses: it is also seen in masons who lift stones with the extremities of the fingers, in ploughmen, &c.; hence we see that the disease occurs most frequently in those who are forced in working to make the palm of the hand a *point d'appui*. Individuals who are predisposed to the disease of which we speak, perceive that they extend the fingers of the injured hand with less facility than usual; the ring-finger soon begins to contract; the deformity first attacks the extreme phalanx, and the others follow its movement: as the disease advances, the finger becomes more contracted, and the flexion of the two neighbouring fingers begins to be remarked. We do not feel any nodosity in front of the chord which runs along the palmar surface of the ring-finger; the two last phalanges are straight and moveable at this period; and the last one is bent nearly at a right angle on the metacarpal bone, but still retains some motion; in this state it cannot be brought to its original position by the most violent effort. A person attacked by this infirmity attached to his finger a weight amounting to 150 pounds, without influencing in the least the degree of flexion. When the ring-finger is flexed to a great degree, the skin presents various folds, the concavity of which looks towards the articulation of the wrist. At first sight we might imagine that the skin was diseased, but dissection proves that the skin remains unaltered, and that the folds depend on adherences of the integument to the altered parts beneath. If we touch the palmar surface of the ring-finger, we find a tightly-stretched chord there; the summit of this chord is directed towards the extremity of the phalanx, and it may be followed to the superior part of the palm of the hand; by flexing the finger this chord is made to disappear, and if we endeavour to extend it, we find that the tendon of the palmaris brevis is moved, and the motion propagated to the upper part of the palmar fascia; this effect depends on the continuity of these parts, and we shall have occasion presently to direct your attention more particularly to the circumstance.

But you may ask, what are the inconveniences of this affection? As the ring-finger cannot be extended, the motion of the two neighbouring fingers is much limited; the patient can only seize a very small body; if he attempt to grasp it strongly, he feels great pain; the very act of catching any body is painful. I have seen from thirty to forty examples of this disease, and have heard almost as many causes assigned to it. Some have regarded it as a thickening and contraction of the skin, not considering that the integument is drawn down on itself by the operation of the cause which produces the disease originally; others make it depend on a spasmodic contraction of the muscles; but

* Sir A. COOPER, many years ago, described this affection, and pointed out its true cause. It is strange that the chief of the Hotel Dieu should be so little acquainted with the writings of his "brother in surgery," as he is wont to call Sir Astley.—ED. L.

this idea is purely hypothetical, for excepting extension, all the other movements of the finger are easily executed. The greater number of surgeons conceive this disease to be connected with some affection of the flexor tendons, and I myself adopted this view of the subject; but we still wanted to know the precise nature of the affection; was it inflammation, engorgement, adhesion of the cellular tissue, or some chronic disease of the parts?

Dissection alone could resolve these questions, which it did by showing that none of the presumed alterations existed. If we examine the articulations of the finger, we shall see that the surfaces are very extensive, and that they are united so as to favour flexion more than any other motion. The lateral ligaments, placed in either side of the joint, present a disposition which it is important to notice; they are placed closer to the anterior than to the posterior surface of the finger; hence the latter has a greater tendency to flexion than to extension. Such is an hypothesis that seems to have some value, but it falls before facts which we shall presently adduce; besides, it cannot be applied with any show of reason to men in the height of youth. Finally, there are some surgeons who attribute the retraction of the fingers to a disease of the joint, which causes the anchylosis of the articulation.

Dissection of a Case.—But let us not dwell any longer on these different suppositions, which I have merely noticed as they are connected with the history of the disease. The important thing to know is, that some obstacle exists, and that we ought to seek out its cause.

Such was a general view of our knowledge upon this point, when a man, who had been for a long time affected with this disease, happened to die. I had kept my eye on him for some years, and was determined not to lose this opportunity of investigation. Accordingly I possessed myself of the arm of this man, had the state of the parts accurately drawn by an artist, and then proceeded to dissect them. When the skin was removed from the palmar surface of the hand and fingers, the folds which I have before noticed, disappeared altogether. It was evident then that the folded arrangement of the skin during life depended on some other affection; but what was this? The dissection was continued by exposing the palmar fascia, and I was astonished to perceive that this fascia was tense, retracted, and shortened. From its lower portion were given off kinds of chords, which passed to the diseased finger. In flexing and extending the fingers, I could clearly see that the fascia underwent a sort of tension, of crackling; this was a trace of light, and made me suspect that the aponeurosis had some connexion with the complaint. But the precise point affected remained to be discovered. I cut through the prolongations extending from the fascia to the fingers; the state of contraction immediately ceased, and the slightest effort was sufficient to bring them to complete extension; the tendons were all sound, and the sheaths had not been opened; but in order to leave no doubt on the subject, I examined the tendons with care. Their surfaces were smooth, and they enjoyed their usual degree of motion; the joints also were in a healthy state, the bones were neither swollen nor changed in any degree. I could distinguish no alteration of the articular surfaces or ligaments. The synovial membranes, and synovial cartilages, all were sound. It was, therefore, natural to conclude that the disease commenced in an exaggerated tension of the palmar fascia, which depended on the violent or long-continued action of some hard body on the palm of the hand.

Treatment of the Affection.—The various opinions held on the cause of this disease must of necessity have exercised great influence on the therapeutics. Many practitioners have thought that it was incurable. Dr. Bennati having consulted Sir A. Cooper on the case of an Italian named Ferrari, who was affected with this deformity, was told by that celebrated surgeon that the disease was incurable. Others, while they admit the possibility of a cure, have proposed different methods, the great number of which alone is sufficient to prove their inefficacy. I have in my time treated a great number of patients successively with fumigations, cataplasms, leeches, and ointments, especially the mercurial. I have employed alcaline douches, simple and sulphur douches, without any success. Finally, fatigued by being always defeated, I prescribed permanent extension, which also failed, having given rise to excessive pain in the palm of the hand when the extension was long continued. Some surgeons had proposed the division of the flexor tendons, and this method was tried upon two occasions; in the first case the tendon was cut in the middle, inflammation immediately set in, and the life of the patient was brought into danger. In the other case, the tendon was cut much lower down; no accident followed, but the finger remained as much flexed as ever. It was several years after these operations that I was consulted by Dr. Mailly for a similar case.

Cases of Contraction of the Ring and Little Fingers completely cured by division of the Palmar Aponeurosis.

Case 1.—In 1811, M. L., wine-merchant, having received from the south a great deal of wine, was desirous to assist his workmen in arranging the casks in the store. While endeavouring to raise one of the casks, which was very heavy, by placing his hand under the edge of the stave, he felt a sensation of cracking, and a slight pain in the palm of the hand. For some time the part remained stiff and sensible, but these symptoms soon went off, and he paid little attention to the state of his hand. The accident was nearly forgotten, when he perceived that the ring-finger commenced to contract towards the palm of the hand, and could not be extended as much as the other fingers. As there was no pain, he neglected this slight deformity. By degrees the disease advanced, and made a sensible progress each year, so that in 1831 the little and ring fingers were completely flexed, and applied to the palm of the hand; the second phalanx was folded on the first, and the extremity of the third applied to the middle of the ulnar edge of the palmar surface. The small finger was strongly flexed on the palm of the hand; and the skin of this part was folded, and dragged towards the retracted fingers.

The patient, annoyed by seeing this deformity getting daily worse, consulted several surgeons, who all said that the disease existed in the flexor tendons, and advised their section as the only remedy; but some would cut both tendons, while others proposed to divide only one. M. Mailly, being consulted in his turn, thought that the disease was probably situate in the flexor tendons, but advised the patient to see me on the subject. The moment I saw the man's hand I recognised the affection of the palmar fascia, declared the disease was not situated in the tendons, and that a few incisions practised in the aponeurosis would be sufficient to restore entire freedom of motion to the finger.

Operation.—The hand of the patient being firmly fixed, I commenced the operation by making a transverse incision nearly an inch long, opposite the metacarpo-phalyngean articulation of the ring finger; the bistoury divided first the skin and then the palmar fascia, with a cracking sound perceptible to the ear; after this incision the ring-finger recovered its position, and could be extended nearly as completely as ever. As I was desirous to spare the patient the pain of a new incision, I attempted to prolong the division of the fascia, by gliding the bistoury deeply under the skin towards the ulnar edge of the hand, in order to free, if possible, the little-finger, but this attempt failed. I was in consequence obliged to make another transverse incision opposite the articulation of the first and second phalanx of the little-finger, which enabled me to detach it from the palm of the hand, but the rest of the finger remained obstinately fixed towards this part. A new incision, however, divided the skin and fascia opposite the metacarpal joint of the finger, to give it some slight liberty; finally, a third transverse cut was made opposite the middle of the first phalanx, and immediately extension of the finger was easily accomplished; this proved clearly that the last incision had divided the point of insertion of the facial process. The wounds were simply dressed with dry lint, and the fingers kept in a state of extension by a suitable apparatus.

Progress of the Case.—Next day little pain; merely some uneasiness from the continued extension. On the following day the back of the hand was slightly œdematous from the pressure of the apparatus, which was clumsily made; another was applied, but the state of irritation continued, great pain set in, and the hand became much swollen. Not wishing to remove the machine applied to extend the fingers, I ordered the hand to be bathed continually with Goulard's solution, which gave considerable relief. On the 15th the lint was removed, and we found some little suppuration had set in; the hand was still swollen and painful. Extension was continued to the same degree as formerly, and the cold lotion applied. On the 16th the swelling had abated considerably, the fingers remained stiff, and suppuration was fully established. 17th. The symptoms were more favourable, and the extension could be increased somewhat without determining any pain. Finally, in the course of some days the swelling of the hand disappeared, and the wounds were healed on the 2nd of July.

The cause of this slowness in the cicatrization depended, without doubt, on the forced extension in which the fingers were constantly kept. The patient continued to carry the apparatus for another month, in order to oppose the reunion of the edges of the divided fascia; and when at length this was removed, we had the satisfaction of seeing that he could flex his fingers with facility, and that the stiffness which remained was only due to the forced extension in which the articulations were held for so long a time; but this rigidity disappeared when the patient had, for a

short time, resumed his accustomed exercises.

Remarks.—This case can leave no doubt of the nature of the disease; but we may be inclined to ask, how can the palmar fascia determine similar effects? To answer this question, we must recal to your memory a few anatomical particulars concerning this fibrous envelope. The superficial palmar fascia is partly formed by the expansion of the tendon of the palmaris brevis, and of the anterior portion of the annular ligament of the wrist. Though very strong at its origin, it thins by degrees, and sends off from its inferior margin four fibrous slips, which pass towards the inferior extremity of the four last metacarpal bones; here each of these slips bifurcates for the passage of the flexor tendons, and each branch of the bifurcated slip passes on to be attached to the *side*, and not to the front, of the phalanx, as most anatomists have thought. These are the slips of fascia which should be cut, whenever the operation becomes necessary. When we dissect off the skin from the fascia beneath, we find a certain difficulty in separating it, because the cellular tissue is dense, and because various fibrous filaments pass from the fascia into the integument; these adhesions explain readily the wrinkled state of the skin, and its motion. At first sight we might be inclined to dread cutting the nerves and vessels of the finger, but these parts are well protected by a kind of bridge formed by the contracted fibres, and run no risk of being divided.

The uses commonly attributed to the palmar fascia are to sustain the tendons of the flexor muscles, to strengthen the arch of the hand, and protect the different vessels and nerves there contained; but in addition to these, it tends constantly to bring the fingers to a state of demiflexion, which is their state of repose, and it is nothing more than the excess of this function, produced by disease, which gives rise to the deformity of which I now speak.

Case 2.—The subject of this operation was a coachman aged about 40. Several years back his fingers began to contract, especially the ring-finger. When he came to the Hôtel Dieu, the fingers were so much flexed that they nearly touched the palm of the hand; and this part formed numerous folds of skin, the convexity of which was turned towards the fingers. When we attempted to extend the fingers, we felt a chord stretching from them to the palm of the hand; both hands were affected by the disease, which could not be mistaken, from its history, and the symptoms before us. When the hand was seized, and the fingers moved, the tension of the fascia became manifest; I immediately divided with a curved bistoury the skin and fascia by two incisions, one at the base of the ring-finger, in order to cut the two slips of fascia passing to it; the second at about an inch and a quarter below the other, in the palm of the hand, in order to divide this prolongation a second time, and at the point where its base joined the palmar aponeurosis. After three incisions the ring-finger recovered very nearly its normal position; though little blood was lost, the patient felt himself weak, I therefore deferred operating on the left hand until another day. It is unnecessary to pursue the history of this case any further, as the treatment and success were exactly similar to the case already mentioned to you.

Concluding Remarks.—The facts which you have just heard, Gentlemen, establish, incontrovertibly, that retraction of the fingers depends, in these cases, on a retraction of the palmar fascia, and chiefly that part of it which is prolonged on the base of the fingers; and, finally, that this disease may be cured by the transverse section of these slips, and of the fascia which furnishes them. These facts are not, indeed, sufficient to establish any general doctrine, but they will not fail to awaken the attention of practitioners; and it is, I hope, probable that these hints may become useful to science and humanity, in multiplying observations on the cause, symptoms, and treatment of this disease. But we should remark, that all analogous cases do not strictly resemble one another, that various methods of cure shall be applied to various diseases, and that the very best may lose their reputation by being applied without care or discrimination; such, for example, would be the fate of the method I have indicated, if it were employed against retraction of the fingers caused by gout, rheumatism, whitlow, or other similar diseases.

REMARKS ON THE

TREATMENT OF RANULA.

By James H. Horne, *Esq., Surgeon, London.*

A sure and simple plan of treating ranula, with a certainty of arriving at a successful termination, has long been required; I trust, therefore, that the following plan, prefaced by a few necessary observations, will fulfil this desideratum, and I beg, accordingly, to introduce it to the

notice of the profession, through the medium of the valuable pages of THE LANCET. Most writers on surgery, from the time of Celsus to authors of the present day, have noticed this disease, and most of them have advised for its cure different plans and different applications, although all the remedial means are very uncertain as to their result. This has arisen entirely from the pathology of the disease not having been understood, or pointed out.

The origin of the term *ranula* is too well known to require notice. Ranula is situated between the under surface of the tongue and the lower jaw, and may be either single or double; either one or both of the Warthonian ducts may be affected, forming a sac or pouch on either or both sides of the frenum linguæ. The treatment, however, is the same in either case, and, fortunately for those who labour under the complaint, the cure in either instance is not thereby prolonged. The contents of the sac or pouch, as to consistence, vary according to the length of time the disease has existed, and, in some instances, the applications used. In cases of recent date it resembles, in thickness and appearance, the white of an egg, and those of older date frequently are caseous, both in appearance and substance,—so much so, in fact, as to be capable of being turned out of the sac and cut with a knife. The size of the tumour is also subject to considerable variation, not exceeding sometimes the size of a filbert; at other times it is as large as a small hen's egg. Larger than this I have not witnessed it, for in the case in which I met with the tumour of this bulk, and which I rather encouraged than attempted to cure for some weeks, the tumour invariably burst when it had arrived at that size. This it did repeatedly, without any attempt at a spontaneous cure. I am aware, however, that authors have related cases in which a much greater bulk has been reached.

The *cause* of this disease has, for the most part, either been passed over in silence by writers, or has had very little attention paid to it, although a matter of the first importance. The causes of all diseases are much neglected; yet we invariably find that ignorance on this head materially interferes with our treatment. Though successful for once in combating a complaint with certain remedies, yet the next time we attack it, a want of correct knowledge as to its cause may completely foil our attempts with the very same agents. This is what teachers call "treating the name and not the complaint." In the treatment of dropsy, for instance, from its frequent beneficial effects, iodine is now set down as infallible, and almost every practitioner has recourse to it, whatever stage of the complaint he has to combat. Yet such a proceeding is, according to my experience with this valuable agent in dropsy, not only injurious to patients in numberless instances, but fast obtaining for the remedy a name which it will not deserve.

Ranula has been ascribed to using the tongue too freely, and public speakers and vocalists have been described as predisposed to the complaint. But the fact is not so. The true cause is inflammation of the internal lining membrane of the Warthonion canals, arising from cold, whereby the salivary secretion becomes changed. Thickening of the walls of the ducts frequently follows, and by degrees stoppage of them ensues, ranula thus becoming developed.

As to the *symptoms*, it is almost impossible to mistake them. Suffice it to say, therefore, that in delicate constitutions, nausea, debility, and general emaciation, supervene; whereas, in the robust and strong, none of those symptoms are perceived. At the seat of the complaint a sense of restraint is felt, but seldom pain.

Treatment.—My attention was first more particularly drawn to this complaint by a case which was unsuccessfully treated at the *Westminster Hospital* in the year 1830, by one of the principal surgeons of that institution,* who assembled the pupils in the operating theatre, and modestly assured them that they would not have seen this patient, had he not successfully treated a similar case at another institution, the friends of the present patient being induced thereby expressly to place her under his care. He, at the same time, earnestly recommended the students to pay particular attention to his mode of proceeding. This consisted simply in puncturing the sac, letting out the contents, and keeping it open by daily introducing the extremity of a finely-pointed piece of lunar caustic, intending to imitate the healthy condition of the open extremity or extremities of the ducts. This method, after having been persisted in for some time, was abandoned, and the surgeon, with inventive genius, ordered the afflicted woman to have a hog's ringle fastened through the sac, to act as a seton, in which state the poor creature (yet poor I should not call her, for what with the good fare of the hospital, and her sedentary mode of life, she got fat) might have constantly been seen with the ring hanging out of her mouth. In this condition I lost sight of her, and whether she was eventually cured or not I am unable to state, though

* Mr. Guthrie.—J. H. H.

I may remark that sufficient *time* had elapsed to cure her twice over. It would be useless to refer to all the various modes of treatment advised by writers. The object has been the same in all plans—viz. to arrest the chronic inflammation which the disease for the most part presents to our notice. The plan which I have adopted with great success for the last three years, indeed I may add without a single failure, consists in applying over the tumour, with moderate pressure, the blunt extremity of a piece of *nitrate of silver*, there letting it remain for several seconds, and then removing it to a second or a third place, according to the size of the ranula. After this has been done for one or two mornings, the sac bursts, the ulcerative process sets up, and collapse ensues, and by following up every morning, or every alternate morning, according to circumstances, the same plan, the cure will be accomplished in less than a month, not a vestige of the disease remaining, nor am I aware of a single relapse having occurred in my practice. The application of the caustic causes but slight pain, but it produces a considerable flow of saliva, which must not be swallowed, or soreness of the throat will follow. Should a slight soreness ensue, however, it quickly yields to the use of weak gargles of sulphate of zinc, &c.

Out of five cases which have lately come under my treatment, three of them had been previously for some time under the care of other gentlemen, which fact I hope affords sufficient grounds for my offering the above remarks for publication.

When ranula arises from the ducts being blocked up by calculous concretions, these of course must be carefully dissected out, after which the disease rapidly disappears.

5, Gerrard Street, Soho, April 29, 1834.

INJURY TO THE ARM FOLLOWED BY

SEVERE TETANUS,

SUCCESSFULLY TREATED.

By WILLIAM MOORMAN, *Esq.*, *Jun.*, *St. Columb.*

WITHOUT exactly transcribing from my minute-book the notes of this case, I beg to furnish a narration of its origin, progress, and termination, because it is one which, I am led to believe, in its result, is not generally so fortunate as this has proved to be,—from the circumstance, perhaps, of our varying and unfixed practice, necessarily the consequence of our ignorance of the pathology or proximate cause of the disease.

Wm. Liddicote, a labourer, ætat. 35, while working at a water-machine on the 8th of March last, had his right arm caught between the cog wheels, which produced a severe and large wound of the upper arm, extending from the lower portion of the deltoid muscle in the direction of the shaft of the humerus to the elbow, tearing the substance of the biceps, excepting a few of its internal fibres, the brachialis anticus, and wounding the supinator mass of muscle at the elbow. The bone was denuded and exposed to the extent of three inches, as was the sheath of the brachial artery, but without any breach. There was some venous hemorrhage from the lower part of the wound.

The jagged portions of muscle were removed, and the limb was laid on a pillow, after the application of lint and roller, which last was wetted by the spirit lotion. Up to the 12th the usual constitutional irritation (severe) was treated principally by purgatives and opiates, when we observed a constant complaint of pain *in epigastrio*, not increased on pressure, which however certainly discovered slightly rigid abdominal muscles. These symptoms continued, without aggravation, to the 18th, accompanied by a pulse ranging from 86 to 96, when it was hoped that no further development of the affection would take place. But here another accident arose—hemorrhage from the brachial artery, which was involved in the sloughing process as high as just as that vessel is on the brachialis anticus; and for this cause amputation was performed at the superior third of the arm, by making one long external flap; its base was met by dividing the soft parts about half an inch below the attachment of the teres major tendon. From this time to the 24th we had no other unusual attendant circumstance when the ligature came off, but on the 26th the abdominal muscles were more rigid; there was stiffness about the neck and jaw, which were complained of on the 23rd, and his countenance presented the tetanic expression. By the 28th his condition was worse, his mouth was incapable of being opened to a greater extent than a quarter of an inch, and on the 2nd of April there was complete tetanus—muscles of trunk and lower extremities affected, and recurrence of most distressing spasmodic paroxysms, at intervals of ten or fifteen minutes.

On to this time, from the 26th of March, his treatment had consisted in using purgatives, with little effect, and opium, in

substance, to the extent of from four to twelve grains in the twenty-four hours, without any apparent advantage. In this stage of the case, which was considered the "mere despair of surgery," I succeeded in getting on the tongue a quantity (five or six drops) of *croton oil*, which, in four hours, produced violent purging, with pain on pressing his boardlike abdomen, and much sickness, the more distressing from the rigid contraction of his maxillary muscles. But this effect was followed, in the night, by interruptions of the regularity of spasms and abatement of their violence; and on the 3rd of April the sufferer was evidently better. His sickness &c. continued to the 7th, with slow but progressive diminution of his tetanus. It must be added, that on the 4th, his purging having ceased, he received an enema, holding ℥ij each of castor oil and spirit of turpentine, and ℥iij of tincture of opium, with a purgative effect, and that on the following day he took, at three doses, six grains of opium. On the 8th his symptoms returned, with less violence however, and they were relieved by the administration of twelve drops of the *solutio muriatis morphinæ*, and one of prussic acid, every second hour, to three doses, in the nights of the 8th and 9th. On the morning of the 10th, he had a distinct rigor, and from this time to the 16th he regularly went on to recovery, leaving me with a stump, having an exposed anterior surface of bone, of the extent of the thumb nail, from retraction of soft parts, which is now tolerably repaired by the granulating process.

The circumstance which has induced me to forward this case, is the fact of the immediate effect of the excessive dose of croton oil given on the 2nd of April, or about the 9th day of the disease. This proceeding was taken on the assumed principle, that two separate and important structures cannot be engaged in active disease at the same time, for certainly my artificial one might have been called *muco-enteritis*, in degree. I may be mistaken in supposing my case and observations of any consequence to the profession. They are submitted, however, with diffidence, in the spirit of communication, and may appear worthy of notice in THE LANCET.

St. Columb, Cornwall,
May 1st, 1834.

ACUTE SMELL.—When Prof. Daumer, in Sept. 1828, walked with Caspar Hauser near a church-yard at Nuremberg, the smell of the dead in the graves, of which the professor had no perception, so affected Hauser, that he shuddered severely, suffered the heat of fever, and immediately had his sight obscured.

CASE OF

ANGINA PECTORIS,

TREATED WITH BLEEDING AND BELLADONNA.

By I. THOS. BATTEN, *Esq.*, *Southwark.*

I WAS requested to see David Gymp on the 9th instant, whom I found labouring under a severe attack of angina pectoris. He had previously enjoyed good health, and had not on retiring to rest on the previous night had the slightest occasion to anticipate a malady of this nature, but an hour after falling to sleep he was suddenly awakened by an excruciating pain about the region of the sternum, heart, and left arm, with an alarming sense of suffocation. This suffering was principally confined to the left side, and he exhibited one of the most distressing spectacles the eye could behold. His face and the whole surface of his body were pale and ghastly, and bathed with cold perspiration; countenance peculiarly anxious; power of articulation gone; gesticulations of the most agonising description, directed towards the heart and left arm; breathing irregular, with anhelation; mouth open; lips white as chalk; eyes turned upward, unnaturally disclosing the conjunctivæ; no pulsation at the wrist; action of heart powerful, intermitting, about 70 pulsations in a minute, the systole being distinguished by a sort of jutting energy towards the semilunar valves of the left side, and continuing much longer than the diastole; pulsation of carotids excessive, and synchronous with the ventricular vibrations.

There was no time for delay, and I therefore determined at once on venesection in preference to relying on remedies which had hitherto seldom been successful, even in the most skilful hands. Accordingly ℥xxx of blood were extracted from the arm, without however producing syncope, which I have reason to suppose could not in this individual be induced by any means, for some time ago I bled him for an attack of enteritis to the amount of ℥xl without giving rise to fainting, although the operation was performed while he sustained the erect position.

However, he now experienced decided relief; his frightful apprehensions of dissolution, the severe pain, the horrible sense of suffocation, and all his other distressing feelings, vanished in a moment, and he suddenly returned from a state of agony and torment to comparative ease. From this period he went on well, save that

he suffered slightly from debility, till the 17th inst., when I was again summoned to attend him for an attack exactly similar to the former, both in character and violence. I now repeated the bleeding to ℥xx, judging this as much as he could afford to lose, considering the previous bleedings and his spare habit of body. It relieved him as on the last occasion, but unfortunately not for a long period, the paroxysm returning with all its violence in about ten minutes. I had nothing now left but to try those remedies which seem best calculated to allay spasm.

℞ *Tinct. Opii., Spirit. Ammon. Aromat.*, aa. ℥iss; *Aquæ Puræ* ℥iij. M. Ft. mist. cujus capiat arger. part. tert. sextam q.q. partem horam.

This mixture was taken without benefit. Friction by means of strong acetic acid was also tried in vain, and what is singular, without any diminution in the action of the heart, or tendency to sleep. I now gave two grains of *Ext. Belladonna*, mixed with water, every five minutes, till three doses had been taken, at the same time directing ℥ss to be well rubbed upon the thorax. By these means the paroxysm was entirely subdued. I subsequently produced the effects of *Ung. Antim. Tart.* upon his chest, and he has enjoyed his usual health up to this time.

Pathological Remarks.—Angina Pectoris has been considered by some authors as a state of mere syncope, while others have attributed it to spasm, and some have supposed that it bears analogy to asthma; but these views have not been clearly established, nor have they hitherto thrown any light on its treatment, so that they have not furnished us with a single remedy capable of altogether subduing its paroxysm. Surely those who have thought it arose from syncope could not reconcile such a notion with the practice of depletion or the administration of narcotics! Asthma, too, has so little relation with the heart, that the idea of analogy to this malady is of no value to us. Those who have ascribed it to spasm have left us as much in the dark as their predecessors, since they have not been able to bring it under the control of either antispasmodics or narcotics. Thus was our great master, John Hunter, left in a state of irremediable suffering. Remote causes, to be sure, have been freely assigned to it, such as disease and ossification of the coronary arteries and great vessels about the heart; but this must be regarded altogether as conjectural, unless the changes of structure were met with in no other instances. The conversion of these parts into bone is not a rare occurrence in aged individuals who have never suffered from angina pectoris. Besides, during an organic change so slow as that required for the conversion of soft parts into bone, which would so far affect the functions of the heart as to subdue it into quiescence, or suddenly reduce it into permanent contraction, the constitution must have suffered, or at least have exhibited some signs of approaching danger; and this change, too, once effected, being beyond the control of the healing art, has remained after the cure of the disease, which could not be the case if they stood in the relation of cause and effect.

This view of the matter and the treatment of the case I have above related lead me to say, that although the remote cause of the disease remains to be ascertained, there can be no doubt that the symptoms result from spasm, though the precise seat of that spasm is hidden. My experience (and I have notes of three cases besides the one in question) altogether tends to point to the right ventricle of the heart as its seat. Here it would prevent a sufficient supply of blood from being carried to the lungs to keep up their functional power, effecting congestion in the right auricle, and an accumulation of blood in the venous system, depressing the nervous system, and ultimately interfering with the respiratory muscles. This diminished flow of blood to the lungs and left side of the heart and its great vessels, would, by lessening the bulk acted on, increase the actions of the left ventricle, and thus cause the systole to be affected with greater force, and continued longer in its vibration, than the diastole. Evidence of this may be derived from the state of the pulse immediately after venesection in any case of congestion, I mean its rising.

If the case of David Gymp had borne analogy to "syncope," a loss of ℥xxx of blood would certainly have destroyed life, or such inordinate doses of opium and belladonna would have entirely subdued the action of the heart; but no such result followed, and the only change that ensued was a state of comparative ease from pain, more equal vibrations in the arterial system, and a general cessation of all unpleasant symptoms.

If, then, the disease be of a spasmodic character, there must be several narcotics, which, by their power of relaxing the muscular fibres, would, if carried far enough in point of dose, negative this unequal contraction, and thereby terminate the paroxysm, which is all that could

be expected in a disease of a purely nervous origin, and therefore liable to return on exposure to the exciting cause. This is what I have endeavoured to show by the foregoing observations.

144, Tooley-street, April 29, 1834.

NEW THEORY

OF THE FORMATION AND NATURE OF

TUBERCLES IN MAN.

At the last sitting of the *Academy of Medicine*, Paris, M. Breschet read an interesting report on this subject, of which the following is a resumé:—

Various opinions have been promulgated on the formation of tubercles. Some regard them as products of inflammation; by others they are attributed to a peculiar action, which is not inflammatory; and some physicians refer the origin of tubercles to parasitical animals of the family called by M. Bory St. Vincent, *psychodiaires*.

M. Kuhn, of Niederbroun, adopts this latter opinion. According to him, tubercles are originally nothing but acephalocysts, and *tuberculization*, a name invented expressly, is the result of the destruction of these animals. The author of the present paper has chiefly studied the development of tubercles in the lungs, and employed for that purpose a microscope, magnifying nine or twelve times. When you extract with precaution one of those small granulations, of a gray colour, which abound in the lungs of certain individuals, and are the origin of tubercles, and place it under the focus of the microscope, having lacerated it, you see that it is composed of other granulations still smaller; and the lacerated substance seems to be composed of an innumerable number of small albuminous globules, connected to another by hyaline filaments, and the whole enveloped by a layer of mucus. Granulations, therefore, appear to be constituted by a filamentous apparatus, surrounded by globules in great number. The analogy is clear and striking between this structure and that of the mould which forms on paste, bread, &c.

This analogy, without doubt, does not amount to a demonstration; however, the ideas of the author (says M. Breschet) deserve peculiar attention; they point out the way to a new theory, and to the probable existence of a new class of beings which has not hitherto been suspected. When we examine the granulations with care, we find a great number which become opaque in different points; others are already half opaque; finally, some have become perfectly opaque in their whole extent.

These observations afford a strong argument against individuals who regard the granulations as totally foreign to the production of tubercles. Tuberculization commences in the centre of the granulation, and extends from the centre to the circumference. It is effected by the absorption of the mucus surrounding the granulation, which is converted into a substance composed simply of the globules and hyaline filaments. The tuberculization goes on more readily in certain individuals than in others, and may go on to such a degree as to obstruct the lungs altogether, and produce death before the tubercles are perfectly formed. M. Kuhn has also examined, with the microscope, the expectorations of phthisical individuals. When the globules which float in the more liquid matter were separated, he found them equally composed of hyaline filaments, and of small viscid globes surrounded with mucus; thus there is a striking resemblance between the globules found in the spittle, and the gray granulations disseminated through the lungs.

From these several facts the author concludes:—1st. That pulmonary granulations are composed of globules and hyaline filaments, clothed with mucus. 2nd. That they are analogous to parasitical animals found in other substances. 3rd. That they may be converted into tubercles, although this change is not always necessary. 4th. That tuberculization is effected by the absorption of the mucus, and finally, that we find the elements of these granulations in the expectorated matter.

The commission proposed to insert the memoir in the fasciculi of the academy.

RE-VACCINATION.

The question of revaccination continues still to occupy much of the attention of physicians of France, not only in the capital, but in all the provincial towns of note. The Academy of Medicine has appointed a committee to examine all the doubtful points connected with the subject, before giving any decided judgment, and, from time to time, various communications are addressed to that body from practitioners residing in the provinces. Amongst the latter M. Lurott, a physician residing at Bischwiller, has made several experiments, the results of which possess interest. Within a period of four years this physician

has practised no less than 3600 vaccinations; and in the year 1832, when an epidemic variola attacked the canton, he had occasion to repeat the operation on several individuals—eighty-six persons of both sexes, who had all been vaccinated during infancy, presenting themselves for a second vaccination. With the exception of one or two, their arms were marked with the vaccine cicatrix in a perfect form. The following table gives the results of the operation, which was performed by introducing the matter through seven or eight punctures on one arm only:—

		Perfect Eruption.		Incomp'ete Eruption.		False ditto.
Individuals re-vaccinated below 10 years of age	12	0		3		7
From 10 to 20	36	5		12		19
From 20 to 30	32	5		12		15
From 30 to 40	6	2		2		2

The first column of this table (*perfect eruption*) embraces all the individuals in whom the pustules were developed three or four days after the operation had been performed, assuming the true character of the vaccine pustule, and following the same march, with this sole difference, that the duration of the secondary eruption was sometimes two days less than that of a true primary one. The formation of the pustules was always attended by a secondary fever, and they did not fail to leave a well-marked cicatrix behind them. The second column (*incomplete vaccine*) embraces those in whom the punctures were covered with pustules on the second or third day; but these always assumed an irregular form, terminated in a sharp elevated point, were filled with a dirty yellow serum, and faded on the sixth or seventh day, without being attended by fever, or leaving any trace on the arm. It is unnecessary to recur to the third column, as it gives only negative results.

Thus, from the preceding table, it clearly follows, that of eighty-six individuals who were re-vaccinated, twelve presented examples of a second eruption, so normal and perfect, that it was impossible to distinguish it from a true primary vaccine. Perhaps it may be here objected, that the first vaccination was imperfect and ill-done; but M. Lurott affirms, that two-thirds of these patients, at least, presented vaccine cicatrices so deep and well defined, as to leave no doubt of the efficacy of the primary operation, and we are entitled to conclude with him that these individuals exhibited examples of two distinct and perfect eruptions of vacciola.

As to the interval of time which elapsed between the two operations, and the results which follow from this portion of the table, M. Lurott observes, 1st, that before the age of ten years re-vaccination has never, in his hands, produced anything but a false vaccine; he has never been able to develop a true and complete eruption when the interval between the two operations was so short; 2ndy, that above the age of ten years re-vaccination has, in a certain number of cases, completely succeeded. The proportion of cases in which the operation gave rise to a second eruption, seems in direct ratio with the interval which elapses between the first and second vaccinations; the longer the interval, the greater the chance of success. Thus, in some cases, the first vaccination which we perform, although perfectly well done, has only a preservative effect of a temporary nature, and is limited to a certain number of years. This seems to be the true solution of the question; but what is that limit? Here our answer cannot be so precise, for it varies according to individual constitution, but from the experiments of M. Lurott, the effect would seem to last for at least ten or twelve years after the first vaccination; but this is a subject which requires a vast number of experiments in different seasons and countries, before we can hope to arrive even at an approximate resolution.

A question proposed by the Academy, and which has not yet been satisfactorily answered, has also been investigated by M. Lurott, though in a limited manner, viz., Will the vaccine matter taken from the pustule of a secondary eruption produce a true primary vacciola? The author answers in the affirmative, on the faith of some experiments, one of which we quote, as it seems very decisive:—

Mademoiselle Bourguiguon, nineteen years of age, who had been vaccinated for the first time at the age of seven months, the traces of which were exceedingly well marked on both arms, was re-vaccinated in November 1832. On the seventh day after the eruption, the left arm exhibited pustules of a complete eruption, a few drops of matter were extracted from these, and a portion was introduced on the same day into the right arm of a healthy child, four years of age. Six punctures were made. A quantity of virus taken from another child, who had been vaccinated for the first time, was introduced into the left arm of the same infant by an equal number of punctures. The boy, thus vaccinated in both arms, was brought to M.

Lurott for examination on the seventh day. The vaccine pustules were equally perfect on both sides, but they were not quite so well developed on the right arm. The progress of the eruption, for both was exactly the same, and the cicatrices which remained, were as deep on one arm as on the other. The virus collected separately from both sets of pustules was afterwards inoculated into different individuals, and gave similar results.

From this and several other facts, which we may have occasion hereafter to lay before our readers, we are entitled to conclude that re-vaccination furnishes a matter as efficacious as that produced by a primary vaccination; indeed we have the analogy of small-pox to support this fact, for experience too often shows, that a varioloid may give rise to the development of a confluent small-pox, whether the individual be vaccinated or no. There is some foundation, therefore, for the opinion which begins to prevail among the public, that the preservative effect of vaccination is only temporary, at least in a certain number of individuals; but this, fortunately, does not diminish its value as a prophylactic, for we have it in our power to repeat the operation whenever circumstances may seem to require it.

Were the statistical account of small-pox cases preserved by physicians on an extensive scale, we should soon have data enough to draw some certain conclusions, but this is not the case, especially in England, where questions of public health (unless they happen at the same time to affect commercial interests) are totally neglected by the government, and left to individual zeal or taste for investigation. The canton of Bischwiller comprises about 23,000 inhabitants, and of these the greater part has been from time to time vaccinated by physicians appointed under the government; the non-vaccinated may amount, perhaps, to one-thirtieth of the whole population. In 1832-3, small-pox broke out in this district, and attacked 439 individuals, of whom 93 were not vaccinated, and 346 were. If we examine these 439 patients with regard to their age, we find that 103 were less than ten years of age; 146 from ten to twenty; 156 from twenty to thirty; 34 from thirty to forty, &c.

The result to be drawn from this comparative statement of ages is interesting and instructive. In the first place we may remark, that the class embracing children below ten years of age, is the most numerous in a population, and contains the greater number of non-vaccinated individuals; yet the amount of patients in this class is one-third less than for the two following. Whence this difference? The answer must be drawn from the modifying effects of time on the preservative power of vaccination. During the eight or ten years which succeed the first vaccination, the preservative effect of the matter is most complete, and gradually loses its influence with succeeding years. After the age of thirty or thirty-five, the number of patients was comparatively insignificant, because after this age, the disposition to contract small-pox is very feeble, and hence revaccination is not so necessary for those advanced a little in life, as for the young or adults.—*French Gazette.*

THE LATE COMBATS

BETWEEN THE

PEOPLE AND SOLDIERS IN PARIS.

(*From our Reporter in Paris.*)

The affair of the 14th of April, in the Rue St. Martin and the neighbouring alleys, has given rise to the presence of many cases of gun-shot wounds in several hospitals; but the number is by no means so great as the *Gazette Medicale* has estimated. We have good reason for saying, that the number of patients at the *Hôtel Dieu* is about 21, including two females; at *St. Louis* there are from 17 to 20, and at the military hospital of *Val de Grace* 8 or 10.

At the *Hôtel Dieu* we did not remark many cases of peculiar interest, because the wounds were either slight, or, as was generally the case, of such a nature as to produce death quickly, from the closeness of the combat. In fact, all the wounds were inflicted either in the chambers of the houses into which the enraged soldiers penetrated, or within a distance of ten or twelve paces at most.

We saw one unfortunate individual in whom the whole of the lower jaw-bone was completely taken away by a musket-bullet; it appeared that a soldier had first stuck him under the ear with the bayonet, and then fired. The ball had penetrated under the left zygomatic process, and come out at the opposite side, leaving a most frightful wound. After death we examined the parts, as far as it could be done by the finger without dissection, and were unable to discover the slightest fragment of the lower maxillary bone; the whole was removed as if taken away by Mr. Cusack himself.

In the ward of which M. Sanson has the care, several operations have been performed with a variety of success. In one

case, that of a soldier wounded in the arm and thigh, M. Sanson cut out the head of the humerus, but the operation was followed by death on the third day. An amputation of the shoulder-joint is doing more favourably, and the patient has every chance of recovery.

We remarked with surprise that M. Sanson follows a method which we had thought long ago exploded in military surgery: almost all the wounds were converted into incised wounds, by incisions more or less deep, according to the nature of the case. Whether this practice is recommendable or not, we cannot as yet say, but it certainly does not improve the appearance of a gun-shot wound. The number of students, especially English, at the *Hôtel Dieu* and other hospitals, is excessive, and M. Sanson took advantage of the occasion to address to them some remarks on gun-shot wounds, of which we select the following from a contemporary French periodical.

After some general observations of a non-medical nature, M. Sanson remarked that bodies put in motion by the explosion of powder, and projected from fire-arms, are acted on by two different impulses, one producing progressive motion, the other rotation; this latter motion is observed in all species of projectiles, and is one of the most powerful causes of the deviations which those bodies exhibit when they penetrate the tissues, and strike a bone or other hard part without breaking it. These deviations have a great analogy with the motion sometimes seen in a billiard ball; every one knows the strange deviations which a good player may give to his ball, in striking it above, below, or on either side.

The contusion occasioned by these projectiles presents three different degrees of intensity, both in the case of wounds and where the integuments have not been injured.

First. The contusion is slight; resolution soon takes place, and the cure is rapid.

Secondly. The contusion is more violent; the texture of the soft parts is altered; and although this change is not manifested for the first few days, it is developed as soon as the inflammation sets in.

Third. The tissues are deeply altered at the moment of the injury, and when inflammation supervenes, large eschars are detached and the wound enlarges.

Whenever the wound or contusion is accompanied by an effusion of blood, we often observe a fluctuation during the progress of the hemorrhage. Frequently, after a considerable engorgement or tumefaction of a part has taken place, there is a rapid diminution produced by the absorption of the most liquid parts of the blood, and a hard clot is formed, which can only be dissolved by a new afflux of fluids. In some cases the tumefaction persists, although we have no obstinate clot of the above-mentioned kind, but here the injury inflicted on the parts has been such, that their vitality is suspended, or the tissues themselves are struck with death, and the effused blood cannot in consequence be absorbed. Contused wounds generally exhibit the same phenomena as simple contusions; however, when they occur in a part of the body where the skin covers an osseous surface, the division may be as clean as if caused by a cutting instrument, and in this case we may hope to obtain union by the first intention. When the contused wound is small, it is sometimes accompanied by the formation of large sanguineous effusions; phlebitis, erysipelatous phlegmon, or gangrenous inflammation may be developed. The entrance of air into these cavities may determine the foregoing accidents; hence we should try to obtain resolution as much as possible, before we proceed to lay them open. As has been already observed, projectiles impelled by powder act in two different manners; first, as simple contusing bodies; secondly, by a movement of rotation, resembling that of a mill-stone turning with great rapidity. Spent-balls and bullets generally produce nothing but contusions, and when they give rise to a wound, the latter is occasioned by the rotatory motion acting on the parts.

Gun-shot wounds are dark-coloured and dry; they are the seat of eschars depending on the attrition of the soft parts, and not on any combustion caused by the projectiles; their form is excessively varied, for they differ according to the volume and figure of the projectiles, and the parts which are struck; however, in all cases where a part of the body has been traversed through and through by a ball, we find the wound where the ball has entered depressed and driven in, while the opposite one is lacerated with projecting edges.

Authors usually say that these wounds do not bleed; this is the case where the projectiles traverse parts which contain but few or small vessels; they certainly bleed much less than similar wounds produced by a cutting instrument; but if a large artery or vein lies in the trajet of the ball, an hemorrhage sets in which is quickly mortal, and the individual dies immediately on receiving the wound. On

this account we seldom see wounds of the latter kind, either in the military hospitals or ambulances, because the wounded perish at once on the field of battle. Sometimes the tumefaction of the tissues, the formation of an eschar, the presence of a foreign body, a scale of bone, or the laceration of the main vessel, prevents the development of hemorrhage, as in cases where a limb has been torn off; but generally it manifests itself soon after the receipt of the wound. It may so happen that the soft parts lacerated by the ball, and pushed on one side, displace a large artery, through lying in the track of the projectile. This is most frequently seen in the regions where the arteries are surrounded with loose very extensible cellular tissue.

A remarkable symptom exhibited by gun-shot wounds is the production of local or general stupor; but this symptom, even in the local form, does not always exist, as authors who write upon the present subject have advanced. When a conscript has been slightly wounded, stupor, at least for a short time, often supervenes, and it is not rare to see young soldiers, although injured in a trifling degree, pass their urine and excrement in their small-clothes. But this is never the case in old soldiers, or where the mind is supported by powerful conviction. This phenomenon is produced rather by the surprise which seizes the individual endowed with slight energy, than by the pain, for the latter in most cases does not set in for some time after the injury. By local stupor, we understand the condition of a limb which remains heavy, cold, livid, and incapable of executing any movement. General stupor is accompanied by disturbance of the senses and intellectual faculties, by loss of consciousness, small concentrated pulse, discoloration and lividity of the skin, insensibility, and, finally, incapacity of moving. When projectiles are driven with great rapidity, they do not generally occasion any commotion of the part; this is certainly true, for we see cases in which bullets have passed through the lower extremities, without preventing the wounded individuals from traversing a considerable space as quickly as if they had never been touched,—a circumstance irreconcilable with the idea that any local stupor, impeding muscular action, exists. There are several examples of this kind at present in the Salle St. Jean. A ball may even carry away a leg without causing the fall of the individual, and soldiers who have lost a limb in this manner say they were not aware of the accident until informed of the want of support by falling on the ground,—not by the commotion or pain; for these wounds do not occasion any immediate pain when the projectile passes at full speed. But when the motion is less rapid, when the projectile, instead of carrying off a limb, fractures it, or breaks the bone in pieces, lacerating and distending forcibly the soft parts, then both local and general stupor is quickly developed. Finally, a great hemorrhage, the circumstance of lying in a cold moist place for any time, the want of proper aid, fright, &c., may give rise equally to general stupor, without the existence of any commotion or injury of the brain. A similar symptom is seen in patients who are carried to the hospitals with a limb extensively injured by the passage of a cart-wheel, &c. Here, likewise, the local pain, the effusion of blood into the tissues, and the fear occasioned by the accident, prolong the state of stupor, although the brain has not suffered in the least.

The deviation of balls and bullets from their course is familiar to every military surgeon. M. Sanson quoted the cases of two individuals who received pistol-shots on the chest, the weapon being discharged quite close to the body; the cavity of the thorax was in neither case injured, for the balls followed the convexity of the ribs, under the integument, and passed out at a point diametrically opposite to that of their entrance. A similar phenomenon is frequently observed in wounds about the head; M. Larrey quotes the case of a soldier who received a wound on the middle of the forehead, near the longitudinal sinus; the ball passed along the sinus to the occipital suture, and gave rise to symptoms of compression; the situation of the ball was discovered by the introduction of a gum-elastic probe; the skull was trepanned and the patient soon recovered.

HYDROPHOBIA CURED

WITH VENESECTION, AND VINEGAR IN A CONCENTRATED STATE.

[Cases of recovery, after the bite of a rabid animal, are so rare, that we cannot pass over the following without notice, although it does not possess all the details necessary for a complete medical history]:—

On the 23rd of April last, M. Dubetat was call upon to attend a female in the Commune of Billenton, suspected of being attacked by hydrophobia. On his arrival, with several other physicians, he found the woman in a lucid interval, and collected from her the following particulars: On the 18th of March preceding, she was

returning with her husband from work, when she was bitten in the left heel by a dog passing by. The dog immediately made his escape, and it was subsequently found that the animal was considered mad, had bitten several other dogs, and was killed in a neighbouring parish. On learning these particulars the woman was much alarmed by the dangerous position in which the accident placed her, but four days elapsed and no change took place in the condition of the wound, which was almost cicatrized. This favourable state continued until eight days passed, when she felt some confusion of ideas, with an extraordinary change of temper; there was a great deal of thirst, but the patient was unwilling to drink, on account of the disagreeable sensations produced by the sight of water.

The wound, at this time, appeared to have assumed a morbid action; there was a good deal of itching about the part, and the wound was extremely red and swollen. Latterly the nervous attacks were so violent, that consciousness was entirely lost during their prevalence. Such was the account given by the patient of the accident and its cause, and immediately after she was seized with a convulsive fit, which lasted four minutes. During this attack the whole body was convulsed, the eyes became brilliant and haggard, the larynx seemed constricted, so as to threaten suffocation; the mouth was covered with a foamy saliva; the countenance expressive of agitation and fury; she cried continually, and was delirious; the pulse feeble and contracted. From the history of the case, a consideration of the symptoms, and particularly of the circumstance that the sight of fluid was sufficient to bring on a convulsive attack, the physicians in attendance could not fail to recognise the presence of hydrophobia.

The treatment agreed upon was, the employment of general bleeding, with baths, in addition to which M. Dubetat recommended the use of strong vinegar during the access. In pursuance of this plan two pounds of blood were immediately drawn from the arm, after which the patient was restored to a state of quiet, and the convulsions were completely removed. One of the physicians present now presented to the patient some tisan as a drink, but the cup had scarcely touched her lips, when she fell again into a convulsive fit. A glass of the strongest vinegar which could be procured was now administered to the patient. A little was unavoidably lost, but the quantity swallowed could not have been less than three ounces. This dose had the effect of immediately arresting the access. A fresh bleeding of twenty ounces was now practised, and the patient remained calm for two hours. After the expiration of this period the access seemed about to be renewed, but the development was at once arrested by a glass of vinegar.

The good effects of the remedy having now been established, the attending physicians confined themselves simply to giving a few ounces of vinegar, whenever a convulsive attack was threatened. This treatment met with entire success. On the following morning there was the appearance of only a single fit; she was able to drink her tisan without its producing any unpleasant sensation, and in the course of eight days she could resume her usual occupations.—*French Gazette.*

ON THE MEANS OF

PREVENTING SCARLATINA.

Extracted from a Memoir presented to the Royal Academy of Medicine. By M. MIGUEL, M.D.

BEING convinced of the inefficacy of the hygienic and therapeutic means hitherto employed against the propagation of the scarlatina, the author of the present memoir was induced to make several experiments, from which he thinks himself justified in concluding "that the scarlatina, like many other analogous diseases, may be inoculated so as to determine a local inflammation which has little reaction on the economy, but is preservative in the same manner as the vaccine virus is against small-pox." As a preliminary measure the author made numerous experiments with the vaccine and variolic matter on adults and children, from which he deduces the following proposition, viz.:—that it is possible to localize often, if not always, those eruptive diseases which are capable of being inoculated, and that individuals subject to be affected are preserved by this process from subsequent danger of contracting the disease. Since, then, the scarlatina may be inoculated, why should it not follow the same laws as variola, &c., and be localized like them, with a preservative influence on the constitution? This was a theory worthy of investigation. M. Miguel therefore was desirous to put it to the proof, and in November 1833, an epidemic attack of scarlatina, which broke out at Nazelly, afforded him an opportunity of making the following experiments.

Experiment 1.—A young girl, the child of Dennis Carron, fifteen years of age, presented an example of scarlatina in the

most unequivocal form. On the fourth day of the eruption the author pricked several papulæ with four lancets. The incisions did not bleed, but a yellow matter was discharged, and adhered to the point of the instrument. This was carefully preserved, and the author immediately proceeded to the house of a nurse, where several children from the *Madeleine* of Tours had been placed. Several slight incisions were here made in the arm of an infant 27 or 28 months old, and the matter contained on the points of the lancets was introduced. On the following evening, that is, thirty hours after, the incisions began to exhibit a blush of redness. On the second day the redness was well marked, and continued to increase in intensity during three days. Each inflamed prick of the lancet resembled, on the fourth day, a commencing vaccine pustule. On the fifth day after the inoculation the inflammation had disappeared. There was no general fever, and the health of the little patient was not disturbed in the slightest degree.

Experiment 2.—Fifteen days after the date last mentioned in the foregoing case, the other children of Dennis Carron were affected with scarlatina. M. Miguel now received the matter on twenty-four lancets, as in the preceding case, and within an hour again inoculated the little child which was the subject of the former observation, in six different places. The incisions now made did not become red, or exhibit any sign of a morbid action taking place in the part. M. Miguel after this proceeded to the house of another nurse, and inoculated three young children, by making six incisions of the charged lancets on the arm of each. These experiments gave rise to inflammation in the case of one child only, aged four years; three of the lancet-pricks inflamed, and produced as many points, which followed the same march as in the case of Carron's child, already described. This new inoculation is regarded by the author as nearly decisive of the question, for if the inflammation which took place in the arm of the first infant was merely traumatic, why was it not renewed on the second application of the virus, and why in the latter experiment did eighteen incisions give rise only to the formation of three pustules, which, as in the case of the child 28 months old, followed the march of a scarlatinous inflammation?

Experiment 3.—It now remained to determine whether this local affection was a preservative against the scarlatina. On the 18th of January, 1834, the author was called upon to see the child of a mason, named Bocé, affected with scarlatina anginosa of the most severe form. The disease had existed twenty-four hours. The man, his wife, and three children, inhabited one low, damp, ill-aired apartment, and it was impossible to separate the sick child from the others. M. Miguel had frequently observed, that when scarlatina breaks out in a family, the first case usually precedes the others by twelve or fifteen days; he, therefore, proposed on the third day to charge a lancet by making an incision on the fore-arm of the sick child, where the eruption was most abundant, and to inoculate the virus into the other children. The mother consented to this proposal, and, accordingly, ten incisions were made in the thighs of a little sister, nine years of age, with a charged lancet. The boy, aged about twenty months, was inoculated in six different points; the epidermis alone was raised up on the point of the lancet, as in vaccination. On the following morning the incisions made in the thigh of the little girl were transformed into as many black points, from dried blood, each surrounded with a small red areola. On the second day this areola was larger, and of a deeper red. On the third day, the inflammatory circle remained stationary, but the skin of this part seemed to have become a little thicker than natural. The inflammation resembled exactly, in form, colour, and tumour, a papula of scarlatina. On the fourth day there was no change, and on the fifth all trace of inflammation had nearly disappeared, the skin remaining only a little brown. There was no fever, nor enlargement of the axillary ganglia. As to the boy, five of the incisions only became swollen and red like those of his sister; they were somewhat more developed and of a deeper colour than hers, a circumstance that might be attributed to the greater tenderness and vascularity of the skin in this young subject. Since the 19th of January up to the 1st of April these children have inhabited the same chamber, and slept on the same bed with their sister. No precaution of any kind was taken to preserve them from contracting the infection, yet both have remained perfectly healthy, and free from any eruptive attack.

These facts, though not sufficiently numerous to decide a question of this kind, are not without considerable interest, and should engage physicians to report, on as extensive a scale as possible, the experiments detailed.

THE LANCET.

London, Saturday, May 10, 1834.

THE most cursory examination of our medical statutes must convince every man who reflects on what he reads, that they were all framed by parties who were interested in supporting a system of *imperfect* medical legislation. The acts and charters relating to medicine bear no traces of the hand of JUSTICE, no sign of a knowledge of the wants of SOCIETY, no evidence of those important facts on which the efficient cultivation of the SCIENCE OF MEDICINE must be founded. Interested parties have laboured to secure the means of their own aggrandizement, and, but too frequently, have succeeded in their object. Thus the public and the independent members of the profession have been made to suffer in consequence of the venality of individuals who have been intrusted with important medical offices, and also in consequence of a want of honesty, or the absence of information, amongst the highest functionaries of the realm. Nothing can be more evident than that the charters which have been granted by the different monarchs of this kingdom, were, for the most part, conceived either under the darkest feelings of ignorance, or under the worst influences of avarice; and that, necessarily, such statutes have been productive of the most disastrous effects on the health and well-being of the community. Until recent times, medicine, although spoken of as a science, has not been regarded as such, either by the senate or the chartered monopolists. Medical practice has not been considered as belonging to the science of medicine, and medical education itself was merged in devices for securing the extortion of an enormous amount of fees.

Within the last ten years, however, the medical press has succeeded in exposing the enormities of this odious system,—it has laid bare the hollow pretensions of the monopolists,—it has illustrated the defects which had too long characterized the system of academic tutelage,—it has exposed, by a copious reference to cases of *mala praxis*, the imperfections in the mode of electing the medical officers of our great charities,—it has opened to the view of the public the disgraceful anomalies of medical law,—and, finally, it has proved, to the satisfaction of every individual who is competent to form an opinion on the subject, that the entire ill-working machinery which constitutes the existing plan (if plan that can be called which exhibits no arrangement of parts) must be abrogated to make way for the adoption of a system which shall be accordant with the philosophy of the times in which we live,—a system calculated to promote the study of medicine as a science,—and thus construct the best and surest bulwark for the preservation of the public health.

Such have been the achievements of the independent medical press—of one independent journal—which the spirit of monopoly could not corrupt—which the terrors of the law could not affright—which treachery and apostacy could not alarm—which combinations, subscriptions, and conspiracies, could neither destroy nor control. That the enemies of reform should suffer defeat, was to be expected, as the natural result of the unfavourable position they occupied. Although comfortably lodged in their palaces of iniquity, they lived not in an atmosphere of truth, and have become at once the fabricators and the victims of artifice and fraud.

It was not, therefore, until after they had resorted to every disgraceful stratagem for maintaining their ill-acquired supremacy, that they avowed, in the moment of their *discomfiture*, an attachment to prin-

ciples which they had ever repudiated in practice. Are then the recommendations and petitions of such men to weigh even as *dust* in the scale of justice? Ought their statements for a moment to influence the minds of the legislature? Ought their suggestions or remonstrances to be received, either by the public or by the ministerial advisers of the crown, otherwise than with feelings of scorn and contempt? What but the most brazen effrontery could have induced the Council of the College of Surgeons to presume to petition the Privy Council against granting a charter to the *University of London*, on the plea "that it would infringe the chartered rights of the petitioners?" How could the self-perpetuating JUNTO have the unblushing effrontery—reflecting on what their past conduct towards the private schools had been—to say that they were "bound to protect the medical schools of the metropolis?" GEORGE JAMES GUTHRIE, one of the petitioners, has lately asked, we understand, in an exulting manner, *Where was to be found that member of the College, who was dissatisfied with the proceedings of the Council!!* How modest a question! How truly in keeping with the taste, the discretion, the mild and gentlemanly bearing, of the "modest author!" Where does this man live? With whom does he associate? Does he hold no converse but with servile expectants and crawling toad-eaters? Is he the king of the circle in which he moves, and beholds he nothing but the sliny spawn of empty-headed adulators and flatterers? Let us answer the inquiries. Let us tell this vaunting blusterer, that of the seven thousand members of the College, there are not to be found two hundred and fifty who can declare, upon their honour, that they are satisfied with the government of that institution. *Satisfied!* What folly to use such a word in connexion with the shameful, the atrocious, proceedings of the Council! *Satisfied!* Where are to be found the causes of satisfaction? In the infamous partiality exhibited in the election of the members of the Council? In their repeated attempts to destroy those rival schools of the metropolis which were unconnected with the members of the Council? In the attempt of the Council to prevent the institution of country schools of medicine? In their attempt to secure to *themselves* the entire receipt of fees in the schools of anatomy and surgery in this metropolis? In shutting out the members of the College from the museum for upwards of twenty-six years? In the non-preparation of a descriptive catalogue of that museum during the same period? In the non-institution of a library for upwards of a quarter of a century? In decreeing, the moment the *University of London* was established, that a student should be compelled to attend one of the hospitals of the JUNTO during six months at least, and for a period of *one year*, unless proof were given of a four years' previous attendance in the wards of a country hospital? In invariably examining candidates for the diploma in private? In frequently treating the students of the private schools with insult, or, at least, in such a manner as was calculated to inflict the greatest possible injury on the interests of the private teachers? Are these specimens of the conduct which has produced "satisfaction," Mr. GEORGE JAMES GUTHRIE? Prithee, man, attend to your "Blind Manufactory," and let the dark, perambulating, dog-led monuments of your adroitness, to be seen in every street of the metropolis, urge you to make *new* sacrifices for the promotion of science and humanity. "Remember the *poor blind*," but misapply not your memory in an attempt to recollect that the members of the College are "satisfied" with the vile, the odious proceedings of the junto.

Two petitions from medical bodies in London have lately been presented to the Privy Council, against the application of the University of London for a charter of incorporation. One of them is called "The petition of the Royal College of Surgeons in London," and the second is entitled "The petition of the medical teachers in London," in both documents, insulting and abusive language is directed against the Senate and Council of the new institution. The petitioners profess to act on public grounds, and with a view to protect the well-being of society. In this respect our experience of the past conduct of many of them justifies us in saying that they have come out in a NEW CHARACTER, but, we fear, with very little chance of sustaining their parts with credit to themselves, or satisfaction to others. In short, the conduct of many of these petitioners might be exhibited in a very unfavourable point of view before the Privy Council. Without circumlocution, we may at once allege, that there is much fraud in these documents,—that one of them is the offspring of trick, that the other is redolent of falsehood. It is false, insolently false, to allege that the petition of a majority of the Council of the College—*of twenty-one individuals*—is the petition of *the College*,—which consists of the Council and commonalty, amounting altogether to upwards of seven thousand persons,—a petition which was agreed to *privately* by its framers—a petition the subject of which underwent no discussion before the thousands of members of the College, but was conceived, written, and executed, in the foul closet of corporate monopoly. But the delinquency of the twenty-one medical patriots, those disinterested haters of monopoly,—those mighty councillors, CARLISLE, GUTHRIE, LAWRENCE, VINCENT, TRAVERS, and Co.!,—goes beyond this crime against truth, for in referring to the second petition—that of the physicians, surgeons, teachers, and other persons connected with the medical schools of London, we find that a majority of the self-perpetuating junto have actually had the impertinence to set down their names *again*,—a second time,—in order to swell out the list of a second class of petitioners,—so that a majority of the *Council* appear in one document as a majority of the *Royal College of Surgeons*, who declare "that they are bound to protect to the "utmost of their ability the medical "schools of the metropolis;" and in the second this identical and truly modest majority of the same Council declare that the grant of a charter of incorporation, with the privilege of conferring degrees in medicine, "would be unjust towards them-"selves, and injurious to the public!"

What opinion are we to form of the conduct of men who can be guilty of such attempts to impose on the Government and Privy Council?

This is, however, in perfect keeping with the whole of the conduct of the executive authorities of the College of Surgeons. The principles of justice appear to be unknown to them. A sense of proper feeling or conduct they have none, but to THE LAST practise this odious system of misrepresentation, in order to secure their monopoly, and succeed in continuing their impositions on the public and the profession.

But we have not yet done with these petitioners. It is alleged in the fraudulent document presented by the JUNTO, "that the grant to the University of a "power to confer medical degrees would "infringe the chartered rights of the peti-"tioners." Never was a more scandalous falsehood penned. We do not, at the moment of writing, know in what manner the counsel for the University have handled this impudent misrepresentation, but the counsel for the College should have been called upon to prove the *truth* of the

allegation. Nothing can be more certain or obvious than that the petitioners have no chartered rights which could be infringed by the University, which, be it remembered, did not solicit that the degree in medicine should confer on its possessor the right to practise medicine. In fact, the University knew, full well, that it was *not in the power of the King to grant such a privilege*, for no charter could supersede the provisions of an Act of Parliament, unless the charter itself were confirmed by an Act of the legislature. The medical degree, therefore, would have amounted to nothing more than an honorary distinction; wherefore the statement of the College Council, taken *per se*, stands thus:—"If his Majesty "confers on any medical school the pri- "vilege of conferring honours on medical "candidates, there would not be found a "single individual who would pay twenty- "two pounds for the distinction which we "confer,"—and the bestowment of such power on the University is what the blockheads of the Council denominate the "infringement of a chartered privilege." But the members of his Majesty's Privy Council, we trust, do not require to be informed that any man is at liberty to practise surgery in England, without holding the worthless piece of parchment which is sold at such an enormous price by the JUNTO of Lincoln's-Inn-Fields. It did not, however, suit the purposes of the Council to make acknowledgments of this candid character. On the contrary, they "beg "leave to express, in the strongest terms, "their serious apprehension of *the public* "*disadvantage that would result from any* "*measures calculated to derange the pre-* "*sent* EFFICIENT *system of medical and* "*surgical instruction*, especially from the "conferring on any one school a mono- "poly of power, and thus degrading and "injuring the other institutions."

Here is the secret of the opposition. The present *efficient* system must not be "deranged," or public disadvantage will ensue. The precious caitiffs! What is this "efficient system" which is entitled to the confidence of the public, and the respectful consideration of the legislature? We select a specimen of it from a document which has just been addressed by the surgeons of the *Bristol Infirmary* to the medical committee of the House of Commons. The entire paper will be found in another page of our journal. Of course the circumstances stated are not new, either to ourselves or to the readers of THE LANCET, —all the provincial hospitals of England having been for many years insulted in precisely the same manner, by the ordinances of this Council—by the decrees of the VINCENTS, the LAWRENCES, and the BLIZARDS.

"It is only since the 25th of November 1831 that we have been recognised by the College of Surgeons, and even then partially, as our dressing apprentices of five years' standing are at present under a peremptory obligation of walking, as it is termed, some one or other of the London Hospitals for a period of six months. On this subject, it is remarkable that the regulation of the College should only require a walking attendance of twelve months in a London Hospital, from young men who never before may have been within the walls of any hospital, while our apprentices have not only witnessed the practice of the *Bristol Infirmary*, but have been constantly employed as dressing pupils, and in the charge of casualties, for a period of five years."

Instead of *possessing* chartered rights, we are prepared to maintain that the Council have FORFEITED THE CHARTER ITSELF, in consequence of this and similar iniquitous proceedings. We marvel that such men could *dare* to approach the Council Chamber of the Sovereign. It proves that their impudence is equal to their dishonesty. And GEORGE JAMES GUTHRIE would have the public believe that the members of the College are satisfied with this atrocious system of partial legislation! Even had a majority of the

Council of the College been entirely *unconnected* with the hospitals and schools of the metropolis, their laws passed in favour of those hospitals could not be too severely condemned for the flagrant partiality displayed in them. But when the merits of the respective institutions are compared, and when it is recollected that a majority of those persons who have thus proscribed the country institutions are themselves the surgeons of the London institutions, any language that we could employ in reprehending such knavish by-laws as the JUNTO have enacted, is inadequate to the full expression of our feelings.

During the several years that the country hospitals have been denounced as incapable of affording surgical instruction, the *Westminster Hospital*, one of the "recognised," has contained not quite one hundred beds. The Bristol Hospital contains upwards of two hundred beds. Yet if the student hold the office of dresser during five years in the Bristol Hospital, the experience thence derived is regarded as useless by the JUNTO, unless it be purified by an attendance of six months in the Westminster institution. At the same time the payment of a fee of twenty guineas for the *opportunity* of attending as a pupil, merely, at the Westminster,—for a *bona-fide attendance*, in eight cases out of ten, is out of the question—entitles a candidate to an examination before the JUNTO of twenty-one—that JUNTO which spurns a certificate of a five years' attendance at, and practice in, the *Bristol Infirmary*, where there are not only two hundred in-patients, but five surgeons to prescribe for those patients and afford clinical instruction to the students—five surgeons, who, in point of reputation and ability, are infinitely superior to the surgeons of the *Westminster Hospital*.

Who, then, are the men that have presumed to pronounce that the surgeons of the *Westminster Hospital*, with less than one hundred patients under their observation, are capable of affording more instruction in surgery in six months, than the five excellent officers of the Bristol Hospital, with upwards of two hundred patients, can furnish in five years? Who are the men, entrusted with the exercise of an important power under the crown, who thus abuse their trust, and violate the sacred injunctions of the law? Why the surgeons of the hospitals of London, who constitute a majority of the twenty-one councillors of the College, the President of the Council for the year being one of the surgeons of the favoured hospital of Westminster. That we may not be charged with making a general accusation which cannot be supported by particular facts, we will here set down the names of the parties, and of the hospitals in London with which they are connected:—

Mr. GUTHRIE, Mr. LYNN, Mr. WHITE, Sir A. CARLISLE,	Westminster Hospital.
Sir W. BLIZARD, Mr. ANDREWS,	London Hospital.
Mr. VINCENT, Mr. EARLE, Mr. LAWRENCE,	St. Bartholomew's Hospital.
Sir CHARLES BELL,	Middlesex Hospital.
Sir ASTLEY COOPER,	Guy's Hospital.
Mr. TRAVERS,	St. Thomas's Hospital.
Mr. BRODIE, Mr. KEATE,	St. George's Hospital.

So that the surgeons of the London hospitals, availing themselves of a position which they occupy in consequence of the self-perpetuating system of the College, ordain that their own institutions are the only hospitals in England which are adequate to the instruction of students in the principles and practice of surgery! Here we have the four surgeons of the *Westminster Hospital* proscribing the certificates of the five surgeons of the hospital at Bristol, while the latter institution is double the size of the former, and while, also, it is

notorious that two of the surgeons of the *Westminster Hospital* are not seen in that institution sometimes for *ten, twelve,* and *fourteen* days in succession!

This view of the odious subject requires that we should notice the next paragraph of the petition. We quote the words of the Council:—

"Your petitioners are firmly convinced that the occupation of teaching, and the power of examining and conferring degrees, ought to be exercised, as they now are, *by distinct institutions*; and that the union, in one and the same institution, of these *discordant attributes*, must be attended with danger to the public welfare, on the numerous occasions in which the *interest of the teacher* and the *duty of the examiner* would interfere with each other."

If these men be not insane, their effrontery is astounding. Having already expressed their serious apprehension of the public disadvantage which would result from the enactment of "*any* measures" calculated to alter the existing system of medical education, they next make known to the Privy Council their firm conviction that the occupations of teaching, examining, and conferring degrees, ought to be exercised by "distinct institutions." This is a decent declaration, certainly, seeing that the men who make it are themselves teachers, examiners, and diplomatisers. But because they happen to carry on the trade of duplicity in *different* places, the "discordant attributes" are considered by them to be exercised in "distinct institutions!" The "institution," in the sense in which the Council would employ the word, relates not to the intentions of the Crown or the legislature in framing a Charter,—to the acts of individuals,—or the tendency of the designs of the incorporated parties,—but to the walls, the structure, the fabric, in which the work of plunder is executed. Let us ask these modest advocates of a just system of legislation,—these fourteen hospital surgeons, teachers, and examiners, who object to the grant of a charter to the University on the ground that the "discordant attributes of teaching and conferring degrees" cannot be exercised in one institution without danger to the public welfare—whether the character of *their* examinations could be deteriorated—whether the value of *their* diplomas could be lessened, if they were to catechise the candidates, and grant the diplomas, in any one of the seven hospitals to which the petitioners belong. *It is well that the majority of the* JUNTO *have offered their opinions on this subject at this juncture.* Nothing could be more opportune than their acknowledgment, "*that the institutions for "teaching and conferring the right to practise should be* DISTINCT,—not distinct with reference to halls and theatres, but with reference to *men*, with whom "the interests of the teacher, and the duties of the examiner, would not interfere in the performance of a public duty." Little did these conjuring monopolists imagine, when they were framing their petition, that they were about to present, for the consideration of the Government, a series of statements irresistibly conclusive in favour of instituting a FACULTY OF MEDICINE. Little did they imagine, that they were making an acknowledgment in proof of the danger to the public welfare from allowing the "discordant attributes" of teaching and examining to be exercised by *one set of men* in distinct buildings! An acknowledgment which must contribute, most materially, towards wresting from them that charter, the powers of which they have so flagitiously abused. The document must not be styled the "PETITION of the Royal College of Surgeons," but the "CONFESSION of the JUNTO of twenty-one."

As we have bestowed so much of our space on the CONFESSION, we must postpone our remarks on the petition and memorial of the "medical teachers in London" to another opportunity.

In the *Liverpool Journal* of Saturday last, it is stated, that the trustees of the Infirmary of that town have adopted a by-law expressly declaring that the surgeons of the Infirmary *shall not* practise pharmacy.

What is to be the next item in the long catalogue of medical degradation? Such *Trustees*, instead of having the control of an infirmary, are not entitled to be the conductors even of a menagerie. It is not enough that the surgeons perform their duties in the Institution gratuitously, but their proceedings in private are to be subjected to control! If, however, it is possible to find a set of subscribers to a charity, who are sufficiently doltish, insolent, and overbearing, to adopt and issue such a decree, is it also possible that there can be found even one regularly educated practitioner of medicine to yield obedience to the tyrannical mandate? Had the College of Surgeons in Lincoln's-Inn-Fields discharged its duty to the profession, the trustees would never have engaged in such a proceeding; but having heard that the aristocratic council of that institution had passed a by-law excluding all practitioners in pharmacy from holding office in the College, the trustees considered, possibly, that their own institution at Liverpool would not be equally aristocratic if they did not follow the noble and high-minded example of the rulers of the surgical profession of England.

As a gentleman who holds an important office in *St. Bartholomew's Hospital* has shown, in a recent examination before a high public body, that he is troubled with an exceedingly short memory, we publish, for his convenience and satisfaction, the following extract, taken from the 38th No. of his, we presume *now*-favourite, journal—namely, the *Medical Gazette*,—page 379:—

"MR. LAWRENCE AND THE COLLEGE OF SURGEONS.—Mr. Lawrence has been elected a member of the Court of Assistants of the College of Surgeons, in the room of the late Sir Patrick Macgregor. We understand that the nomination was proposed by Mr. Abernethy, and seconded by Sir A. Cooper; and that, of those present, *eight* voted for Mr. Lawrence's admission, and *seven* against it—giving a majority of *one* in his favour. At present we forbear to make any remarks upon the subject; indeed we have not yet heard what Mr. Lawrence intends to do on the occasion, and therefore anything we may have to say would at present be premature.

"It is said that one of the members of the Court of Examiners means to resign, in consequence of the election above mentioned."

We may observe, with reference to the number of voters mentioned in this paragraph, that we were informed at the time on the *best* authority, that only thirteen of the Council voted on the occasion. Their names stood as follows:—

For the Election of Mr. LAWRENCE,—Sir A. COOPER, Mr. ABERNETHY, Mr. S. COOPER, Sir A. CARLISLE, Mr. WHITE, Mr. COPLAND, Mr. HOWSHIP.

Against his Election,—Mr. VINCENT (colleague of Mr. LAWRENCE in *St. Bartholomew's Hospital*), Mr. ANDREWS, Mr. LYNN, Sir W. BLIZARD, Mr. KEATE, Mr. GUTHRIE.

So that Mr. LAWRENCE was not only elected by a mere majority of *one*, but the aggregate numbers of his majority amounted to only one-third of the members of the Council.

CASE OF FISHER.—LETTER FROM MR. GILBERTSON.

We publish the following letter,—a communication in every respect honourable to the feelings and judgment of the writer,—with very great satisfaction. It confirms, to the fullest extent, every allegation made by Mr. COSTELLO, in relation to the successful application of lithotrity in the case of the unfortunate

Fisher, and proves, besides,—whatever may have been Mr. Costello's impression to the contrary,—that Mr. Gilbertson was fully sensible of the advantages derived by the man from Mr. Costello's skill, and that Mr. G. was not instrumental in sending a man who was "at work and quite well" on such a hazardous adventure as that of a visit to London for the purpose of obtaining relief from one of the young "operators" of *St. George's Hospital*.

The medical Dogberry was commanded to state, that The Lancet had been "hoaxed" when it first alluded to the death of Fisher. Verily, Roderick's occupation is a respectable one for the physician of a metropolitan hospital. It is possible, however, that this hired scribe has already been made to pass through so many dirty channels, that he does not conceive that any course which he may now pursue, can further contaminate his conduct or character. We believe there is not an intelligent member of the profession who does not consider that the death of Fisher in *St. George's Hospital* ought to have been made the subject of a coroner's inquest; at the same time it is quite certain that no coroner would have been justified in calling Cæsar Hawkins as a witness, without intimating to him "that he was not bound to answer any "question which might criminate him-"self."

To the Editor of The Lancet.

Sir,—My name having been coupled with others in a letter by Mr. Costello in your last number of The Lancet in such a way as to show no very good feeling on my part for the operation of lithotrity, or for the well-doing of the poor fellow (Fisher), and certainly tending to prove that fair-play, or even common courtesy, had not been shown to Mr. Costello, I beg to say, that so far from being lukewarm towards the operation of lithotrity, I feel the greatest possible interest in it, and trust that in a very short time we shall only know the dreadful operation of lithotomy by name; for it appears to me that lithotrity can scarcely fail to have the desired effect if had recourse to when the calculi are small. You will greatly oblige me by giving the following statement in your highly valuable Journal. About two years ago I received a note from my friend Dr. Fergusson, informing me that Mr. Costello was going to operate on the man Fisher at Windsor. On the day appointed I went, but owing to some mistake Mr. Costello did not come. Another day was fixed, when I was obliged to be in Norfolk, so that I did not see the patient until the third or fourth sitting, although he had been operated on at least twice in Egham. A few weeks after, a case of stone came under my own care, when I wrote to Mr. Costello, and although I informed him that little or no remuneration could be given him for his trouble, the man being very poor, he in the most handsome and kind manner came down and operated on him, and on the second sitting of my patient, and not until then, did I see the man Fisher, when Mr. John Furnivall came with him to my house to be operated on, it being less inconvenient for Mr. Costello to have him there. After that time I had frequent opportunities of seeing Fisher, when he always expressed himself thankful for what had been done for him. He had resumed his work as a thrasher, and said he felt little or no inconvenience. Some months after, Mr. Costello being at my house, and wishing to see Fisher, the man was sent for (I believe by Mr. John Furnivall, but who did not attend the operation), when he stated that he had been at constant work, but occasionally suffered from slight pain. He was sounded, and a small stone was found and broken down, from which operation he appeared to suffer little or nothing. He was in good spirits, and looked very much better than when I had last seen him. Mr. Costello then told him, should he have any further symptoms, to inform Mr. Furnivall, he being Mr. Furnivall's patient, and that he would come down again. From that time I never heard of him until I was told he had died in *St. George's Hospital*, and that after the operation of lithotomy, which certainly much surprised me, as I believed, from not having heard anything of him, and he being so well satisfied with lithotrity, that he was at work and quite well. How or where he got his information that Mr. Costello had gone to France to live I know not, but certainly not at my house, I having frequent interviews during that period. Trusting this explanation will completely exonerate me from any want of courtesy to Mr. Costello,

or indifference for the operation of lithotrity, as well as to prove, as far as regards the operation on poor Fisher, that nothing in my opinion could be more successful or satisfactory to the operator and the patient.

I remain, Sir, your obedient servant,

F. GILBERTSON.

Egham Hill, May, 1834.

CONCOURS FOR THE CHAIR OF

CLINICAL ACCOUCHMENT, PARIS.

THE concours for this chair still goes on, and it is not easy to say in whose favour the struggle will terminate. The second trial, which consisted in the examination of two patients for half an hour at the *Maternité* or *Hotel Dieu*, and the subsequent delivery of a clinical lecture which was to last for an hour, took place last week, and left the most favourable impression of the talent and learning exhibited by two candidates, M. VELPEAU and M. DUBOIS. The first patient submitted to M. VELPEAU at the *Maternité* was a female, pregnant for the fifth time. All her labours had terminated well. The present labour had commenced two days before the visit of M. VELPEAU, and the waters had been immediately discharged. The pains were at first feeble, and then ceased altogether; then returned again with some increase of force, and again fell off, to return again, and the patient still remained in the first period of labour. In reference to this case the speaker first called the attention of his audience to the distinction of labour into two periods; the first, the period of *preparation*, the second of *expulsion*. In the former the uterus alone acts, the woman makes no muscular effort, and it may be readily recognised on merely seeing the woman, or hearing her cry:—"It was thus," said M. VELPEAU, "that I recognised the first period of labour in the present case; I then passed the finger into the vagina, and felt a hard tumour, thro' a membrane which presented no opening. To discover the os uteri it was necessary to carry the finger as high and as far back as possible, nearly to the sacro-vertebral angle, where the os uteri was found soft, and dilated to the size of a two-franc piece, and where the first position of the head was discovered." After briefly noticing these particulars, M. VELPEAU passed to the two capital features of the cases, viz., the obliquity of the os uteri, and the slowness of the labour, and insisted much on the importance of not separating these two phenomena. The effects of an oblique position of the uterus on the progress of labour, were then investigated in a masterly manner, and various methods pursued by accoucheurs in cases of this kind were passed in review. Some propose to restore the position of the os uteri by carrying the finger into this cavity and drawing it forwards. In more severe cases the incision of the neck has been proposed and practised, but this is always a dangerous operation. When the deviation is not carried to a considerable degree, as in the present case, M. VELPEAU said he had entire confidence in the powers of nature. The labour will indeed be slow, but the neck of the uterus gradually dilates, is brought to the centre of the pelvis, and the accouchment becomes natural. Although the labour, in the present instance, had already lasted fifty-five hours, M. VELPEAU prognosticated a favourable termination, from the return of the pains, the previous labours of the patient, which all ended favourably, and, finally, the position of the child. This latter circumstance gave occasion to M. VELPEAU to enter into some details, when the learning for which he is distinguished was shown to great advantage, the more so as his lecture was completely extemporaneous, being delivered immediately after the examination of the patient. BAUDELOCQUE has assigned six positions for the summit of the head. These are reduced to four by M. CAPURON, (one of the judges); and, latterly, NÆGELE, professor of midwifery at Heidelberg, has further reduced them to two positions, according as the occiput is turned towards the right or left side of the pelvis. This idea of selecting the lateral moieties of the pelvis, instead of the anterior and posterior, adopted by BAUDELOCQUE and others, is not new. HERBINEUX, TISTIN, and BODIN, had before entertained ideas somewhat similar; and SMELLIE, in England, professed the same doctrine. As these opinions have been supported very re-

cently by M. Dubois (one of the competitors), M. Velpeau applied himself with much earnestness, and, as it appeared to our reporter, with perfect success, to uphold the ancient doctrine, and then returned to a consideration of the case which formed the subject of his lecture. Was anything to be done to favour the expulsion of the child, to hasten the labour? This is the main question of the case, and it gave rise, naturally, to an examination of the various means employed for the purpose. Bleeding when the subject is plethoric; belladonna when the os uteri does not dilate; or, when the uterus is inactive, the use of the secale cornutum, or a bandage. "The third substance," said M. Velpeau, "is a powerful means of animating the uterine contractions, although the property has been denied it by many writers. Indeed the controversy on the subject has been so great, that I have counted no less than three hundred articles written by different authors within a few years. But this remedy does not seem applicable to the present case; nothing presses here. Besides, though the administration of the ergot may have no danger for the mother, it is not altogether so for the child, which is often compressed in an inconvenient manner by the strong permanent contractions which the drug develops."

The second case was one of presumed abortion, during the examination of which M. Velpeau dwelt at some length on the value of the stethoscope as a means of diagnosis, and of determining whether the child was alive or dead. On applying the ear to the abdominal parietes, the pulsation of the heart was not distinguished, but the *bruit de souffle* attributed to the placental pulsations was readily heard. Here the speaker discussed the nature of this sound, its cause, and its connexion with pregnancy, and demonstrated that it is not a symptom peculiar to pregnancy, as it has been heard in cases where the uterus contained a simple tumour, or even where the ovary was the diseased part.

This lecture, delivered without the slightest hesitation, and with remarkable clearness of arrangement, was received by a crowded audience in the most flattering manner.

On the 25th M. Dubois, after having visited his patients, proceeded to deliver a clinical lecture on their cases, but was unfortunate in the subject assigned to him by lot, viz. *cancer*. The first patient was affected with a cancer of the neck of the uterus, extending to the vagina, and rendering any operation extremely difficult, if not impossible. The commencement of the lecture consisted in some general reflections on the nature of cancer, after which the subject was treated in connexion with the art of midwifery. Thus the speaker proposed to examine, successively, the influence of this affection on fecundity and the progress of pregnancy, and its influence on labour, and the effects which may probably give rise to after delivery. He also investigated a question which has been much debated, whether cancer is more common in married women, and those who have had children, and finally touched on the reciprocal influence of pregnancy and labour on the primitive malady. 1st. Is cancer more common in women who have borne children? This question is resolved by facts. In forty cases of cancer of the uterine neck observed by Madame Boivin, thirty-two existed in females who were mothers. Some pupils of M. Dubois have also collected cases in the various hospitals of Paris, and of seventeen patients it was observed that sixteen had borne children. As to the influence of this disease on fecundity, although many women affected with cancer of the neck of the uterus have become pregnant, yet the tumefaction and mechanical changes of the os uteri, joined to the vital alteration of the whole uterus, must generally present an obstacle of no small degree to fecundation. What is the influence of cancer on the march of pregnancy? This depends on the development of the disease. When the latter is so far advanced as to oppose the dilatation of the uterus, abortion is a necessary consequence, or the latter accident may be occasioned by the frequent hemorrhages, depending originally on the cancerous affection, and often taking place, to a dangerous extent, about the fourth month. There cannot be the least doubt but that cancer of the os uteri, in many cases, retards labour. M. Dubois related many examples of this effect. He has

seen labour, under such circumstances, commence and be suspended one, two, three, or even several times, before the uterine efforts became continued, and in some cases the resistance is so great, as either to give rise to rupture of the neck, or to render its division by the accoucheur indispensable. Here the speaker took occasion to criticise the opinion advanced by his opponent, M. Velpeau, on the danger of cutting through the neck of the uterus. "Even laceration of this part," said M. Dubois, "is not of itself dangerous, and only becomes so when complicated with, or preceded by, severe accident. The artificial division of the neck of the uterus is still less to be feared. A few months back, a woman pregnant of twins entered the *Maternité*. The labour had continued for many hours, and the head, which had descended into the cavity of the pelvis, was closely embraced by the neck, which was rigid and showed no tendency to dilate. In this case I divided the neck of the uterus." The operation, which was extremely simple and easy, gave rise to uterine contraction, and the woman was delivered without accident in five minutes after. A similar case presented itself at the same establishment a few days ago. M. Dubois found it necessary to divide the neck, upon which the labour proceeded in the most favourable manner. A great number of analogous cases are to be found in works upon midwifery, and, upon the whole, the speaker concluded that division of the neck of the uterus is an operation in itself not dangerous, giving rise neither to hemorrhage nor inflammation, but at the same time one to which the practitioner should never have recourse, without a perfect conviction of its necessity.

The influence which cancer may exercise on the health of the woman after delivery, is principally to be estimated by the character of the pains. This M. Dubois asserts to be an important point in practice; and whenever the cancerous affection, by increasing the resistance of the os uteri to any considerable extent, gives rise to the development of excessive and long-continued uterine pains during labour, there is great danger of puerperal peritonitis supervening.

The second case on which M. Dubois had to speak, was one of *purulent ophthalmia in a new-born infant*. He first applied himself to a consideration of the three principal forms of ophthalmia, and then endeavoured, chiefly by negative reasoning, to show that the present case did not come under the head of *blennorrheal ophthalmia*, and was inclined to attribute it to the too irritating influence of light on the eye of the new-born child. "As the inflammation is not severe, the treatment," said M. Dubois, "should consist in the frequent application of cold lotions; and should this not suffice, or if the inflammation become more intense, a single leech must be placed at the angle of each eye. When the disease assumes a chronic form, a solution of nitrate of silver, two grains to the ounce of water, produces the most excellent effects."

Such is a very brief outline of the two most remarkable lectures delivered during the present *concours*. We have selected them as an example of the manner in which each subject was treated, and when we reflect that the speakers were allowed but a comparatively short time for reflection or arrangement, it must be confessed that either is well worthy to fill the chair to which he aspires.

INOCULATION.

To the Editor of The Lancet.

Sir,—In my ignorance of medical jurisprudence, I wish for information, that a very serious evil may be remedied, and I know no better method which I can adopt than an application to the Editor of The Lancet.

I will state the case:—A surgeon, having the care of the parish in which I reside, together with three other (all agricultural) adjoining parishes, introduces into one of them the small-pox by inoculation. The contagion spreads rapidly, and creates general alarm. The parish officers think it necessary, for the security of the children, that inoculation should be resorted to. It is calculated that, in consequence of these proceedings, not less than 200 children in the four parishes have been inoculated.

The surgeon contracts for three shillings per head, the operation not taking place in one case at the several homes,

but in a school-room near the church. Nor does the surgeon visit the children afterwards at their homes, but they are again, when in a state of disease, brought for his inspection through the most populous part of a parish (consisting of upwards of 1600 inhabitants) to this school-room, where children daily meet; and here I know that, in one instance, they were kept congregated some hours beyond the appointed time for inspection. Thus the contagion is carried and spread in every direction.

It appears to be a novel proceeding for a medical practitioner to contract for inoculation at three shillings per head, after he had himself introduced the disease which renders it necessary. If this be regular practice, we can never hope that small-pox will be eradicated from the country.

The question I would wish to ask of you is, whether a medical man may with impunity thus introduce, and thus conduct, the management of this dreadful malady. If so, the discovery of Dr. Jenner seems to have been made in vain, and the annual parliamentary grant of thousands of pounds for the encouragement of vaccination, unproductive of general benefit.

I am, Sir,
Your very obedient servant,
M. M.

April 21, 1834.

*** In the present state of the law a surgeon may exercise his discretion, and refuse to inoculate where there has not been previous vaccination. He may also exhibit his indiscretion, and inoculate in cases where the protective measure has not been resorted to. The parish authorities ought not to have employed the man who caused the mischief. This subject will not be overlooked by the Medical Committee of Parliament, and, with a view to inquiry, our correspondent should transmit a full statement of the particulars to Mr. WARBURTON, the chairman. If the name of the medical practitioner be given, he may himself be called as a witness before the Committee, when he may have an opportunity afforded him of entering on a defence of his conduct.

ADDRESS FROM THE SURGEONS OF THE BRISTOL HOSPITAL

To the Chairman and Members of the Medical Committee of the House of Commons.

GENTLEMEN,—In addition to the answers to the questions contained in your circular, we beg leave to subjoin the following statement, to which we respectfully call your attention, as connected with the subject which must form no inconsiderable portion of your inquiries,—viz. medical education.

In the year 1735 Bristol projected, and, in 1736, carried into effect, the scheme of an hospital, supported entirely by voluntary contributions. Its foundation is believed to be nearly coeval with, if not to have preceded, that of some of the hospitals in London, and of similar institutions in Scotland and Ireland (royal, endowed, and chartered foundations excepted). This institution now contains from 200 to 220 in-patients, from 5000 to 6000 out-patients, and the average number of casualties amount to about 1200 annually.

The whole range of building is uniform and extensive (having been re-erected within these few years), furnished with baths, warm air, and other modern conveniences, and has attached to it a spacious garden as a promenade for convalescents; in a word, no expense has been spared which could contribute to the comfort and recovery of the inmates.

This institution is also enriched with a valuable and daily-increasing museum, a library, a lecturing theatre, and excellent accommodation for examinations and dissections; in the latter of which our students are almost daily engaged under the able superintendence of the house-surgeon.

The ordinary disbursements are annually from 5000*l.* to 6000*l.*; and there has been lately expended, in providing accommodation for the out-patients, about 3000*l.* in a supplementary building.

It may not be amiss here to recount the advantages which the city of Bristol possesses for a great medical establishment. With a population equal to that of most of the capitals of Europe—with a large and well-regulated hospital, and also a medical school—the student here may learn not only the principles and practice of medicine and surgery, but also witness, on a great scale, the nature of most of the diseases and accidents which afflict mankind.

With the above statement before you, Gentlemen, it will perhaps be a matter of surprise that there could have existed any

doubt of the propriety of conceding to us the ability to qualify any students for examination; yet the fact is, that it is only since *the 25th of November*, 1831, that we have been "*recognised*" by the College of Surgeons; and even then partially, as our dressing apprentices of *five* years standing are at present under a peremptory *obligation* of walking, as it is termed, some one or other of the London hospitals for a period of six months. On this subject, it is remarkable that the regulation of the College should only require a *walking* attendance of twelve months in a London hospital, from young men who never before may have been within the walls of any hospital; while our apprentices have not only witnessed the practice of the Bristol Infirmary, but have been constantly employed as "dressing" pupils, and in the charge of casualties, for a period of *five* years.

This representation, we presume, entitles the Bristol Infirmary to be justly considered an hospital of the first class. Even in the metropolis there are not above four or five that exceed it, either in size or importance, as a school for scientific and practical surgery; and none surpass it as to the regulations established by its governors for the education of the students. It may be asserted, that no hospital in the kingdom affords greater opportunities for the acquirement of medical and surgical knowledge. On this subject the surgeons are desirous of the fullest investigation; and, as some proof, they beg to refer to every one of their students who have attended in London, who will confirm the fact from their own experience and observation; besides, it is well known that students who have received their medical education at this infirmary have acquitted themselves with marked ability as candidates for their diplomas, when under examination at the College of Surgeons and Apothecaries' Hall.

For these and many other reasons, the surgeons of the Bristol Infirmary have ever considered the following regulation of the Council of the Royal College of Surgeons as oppressive and unjust; but, they are willing to believe, founded on an erroneous view of the opportunities the Bristol Infirmary affords of cultivating medical science:—Pupils and apprentices, when candidates for the diploma, must bring proof "*of having attended during twelve months the surgical practice of a recognised hospital in London, Dublin, Edinburgh, Glasgow, or Aberdeen, or for six months in any one of such hospitals, and twelve months in any recognised provincial hospital.*"

The surgeons of the Bristol Infirmary are of opinion that the above regulation of the Royal College of Surgeons,—which requires an attendance of six months, as a walking pupil, at one of the hospitals in London, in addition to an attendance during one or more years at a recognised provincial hospital, as a necessary condition for obtaining the diploma of the College,—is highly objectionable; and, for the following reasons:—

1st. Because it is unnecessary. A student may spend the prescribed time quite as profitably in attendance at a recognised provincial hospital, as upon those in London. In fact, with the exception of four or five of the metropolitan hospitals, the recognised provincial hospitals are upon a larger scale than those of the metropolis.

2nd. Because it is injurious to the morals of students. It is a notorious fact that students, after a residence of only a few months in the capital, frequently fall into practices of dissipation and immorality foreign to their previous habits, and ruinous to their future usefulness, respectability, and happiness.

3rd. Because it has a tendency to render provincial education less efficient than it would otherwise be. It has often been observed that students neglect to make a proper use of the advantages afforded to them in their attendance at a recognised Provincial Hospital, from a notion that the full prosecution of their studies may be delayed until their residence in London, where, they imagine, the opportunities of acquiring professional knowledge will be more worthy of their attention; and, in consequence, they crowd into that brief period a far greater number of pursuits than their time, or their previously-formed habits and inclinations, will enable them to follow with any prospect of advantage.

4th. Because it occasions a very considerable increase in the pecuniary expenditure of the student, without advantages in any degree correspondent with the extent of the outlay.

Lastly. Because it implies an invidious distinction between the surgeons of the recognised Provincial Hospitals and those of the Metropolitan Institutions, a distinction which cannot be supported by a fair comparative estimate of their respective attainments and capabilities.

In addition, we beg to draw your attention to the circumstance that, not only has the time prescribed for professional study been of late considerably lengthened, with a corresponding augmentation of expense, but the number of branches of science which must be

attended to has also been greatly increased.

Gentlemen, we will take up your time no longer than to submit to you that we require redress; and to repeat that the Bristol Infirmary has a fair claim, in every point of view, for admittance into the first class of hospitals in the United Kingdom. We have the honour to be, gentlemen, your most obedient servants,

RICHARD SMITH, WILLIAM HETLING,
RICHARD LOWE, HENRY DANIEL,
NATHANIEL SMITH,
The Surgeons to the Bristol Infirmary.

Bristol Infirmary Consultation-room,
April 22nd, 1834.

To Henry Warburton, esq., M.P. &c. &c. Chairman of the Committee on Medical Education, House of Commons, London.

[The foregoing document has been forwarded to us by request of the surgeons of the *Bristol Infirmary* as a "*corrected* copy of their memorial. The original was sent to the Parliamentary Committee last week, and a printed copy has been placed in the hands of each member of the Committee. Copies have also been sent, or will be sent, to the surgeons of all the different 'recognised' provincial hospitals in the kingdom."]

ST. GEORGE'S HOSPITAL.

STRICTURE OF THE RECTUM.—CLINICAL REMARKS BY MR. BRODIE.

SARAH WILSON was admitted into Burton ward under the care of Mr. BRODIE, for an affection of the rectum. On examination there was found a contraction of the gut, about two inches above the anus. The mucous membrane was thickened, and the finger could not pass the contracted portion, which was felt to have a sharp edge. The inner margin was narrow, with its broad base outwards, towards the gut. Below the stricture, the mucous membrane of the gut was felt to be rough and irregular; there was no part of it ulcerated; there were hemorrhoids about the verge of the anus, and ulcers of the legs.

The account which we could gather of her previous history was, that five years since she was attacked with menorrhagia, after which she felt a difficulty in voiding her feces, which continued to increase up to the time of her admission, when the pain and straining at every evacuation would last for half an hour, which was always the case except at the periods of the menstrual secretion, when these symptoms were less violent. Her general health was deranged; she had a pale sallow cachectic appearance, and no appetite.

In a clinical lecture on this case, Mr. BRODIE made the following observations:—This, Gentlemen, is a case of stricture or contraction of the rectum, a disease of which you will obtain but a very confused notion from books, for in them you will generally find the affections of contraction, scirrhus, malignant disease, and scirrho-cancer, all mingled into one. Sometimes when the gut is contracted, it may be from a malignant disease, which may eventually destroy life. Sometimes this disease may be kept at bay, and sometimes the patient may be quite restored. Malignant disease, such as scirrhus and fungus hæmatodes, of the rectum, have been confounded with non-malignant diseases.

With respect to the pathology of stricture of the rectum, there is yet much left us to investigate; for no one has yet effectively stated it. In the works written by Mr. COPELAND and Mr. MAYO, there are many very useful practical observations, but those gentlemen have not studied the pathology of the disease in a systematic manner. Stricture of the rectum will not destroy life for many years, and when you have an opportunity of examining a patient after death from this affection, you of course find the disease so advanced, that you cannot study its pathology, to investigate which in a proper manner you must have accidental opportunities of seeing the disease in its early stages, and of knowing the first morbid appearances which the disease puts on. I shall not pretend to describe these to you now very minutely, but will do so as nearly as I can.

When you examine the rectum in a patient affected with stricture, you find the gut contracted to a greater or less degree, and sometimes the finger will not reach the contraction. In the early stage the mucous membrane is thickened. I believe the disease accrues in this membrane, not by spasmodic contraction, but by chronic inflammation, throwing out lymph, and thus becoming thickened, and welted, and attached to the muscular tunic of the bowel. If the disease proceeds, it extends beyond this, so that in the advanced stages you cannot tell where it has begun. Where the inflammation commences in the cellular texture of the gut, abscesses may form and burst into the bladder, the urethra, or the vagina, uniting the two in one. Ulceration may then begin in the stricture, and extend to the neighbouring parts above and below it. The situation

of the stricture is almost invariably about two or three inches above the rectum. To this there are but few exceptions. It may be situated as high as seven inches above the orifice of the anus, or, higher still, in the sigmoid flexure of the colon. But where you meet with one of this case, you meet with twenty of the others.

You will meet with stricture of the rectum more commonly in women than in men, and those who have been subject to piles are more liable to stricture. You have a very fair history of the common course of such diseases in the case now before you. As the disease proceeds, there comes on a mucous discharge from the rectum, with pain in the sacrum, and down the back of the thighs. Abscesses form, which may burst above the situation of the stricture; feces may get into these and inflame them, and they may form an ulcerated connexion between the rectum and the urethra in the male, and the rectum and the vagina in the female, and sooner or later the disease proves fatal. By thus spreading, it in time affects the constitution, and hectic fever ensues. The immediate cause of death in these cases, is the increase of the stricture to such an extent, that at last no feces can pass, when symptoms like those of strangulated hernia come on, and the patient expires. Here there is a thick mechanical contraction of the parts, which is to be overcome by mechanical means. Just examine the rectum with your finger, to see if you can pass it into the stricture; if so, introduce upon it a *bistourie cachée*, screwed so as to cut but little in depth, or otherwise hemorrhage from the mucous membrane of the rectum may occur. Cut so as to open the stricture very little. If the stricture be broad-edged and not sharp-edged, you should trust to dilating the stricture with bougies. I use bougies of elastic gum. You should choose one of a certain size, suitable to the case, and gradually increase its diameter, using it once or twice daily. By this means you will dilate the stricture, and put the mucous membrane into a more healthy state. But if any good is to be done in such cases, it is at an early period of the disease; for you can do none when the disease has at all advanced. If there be any ulceration, you cannot relieve it; nor can you if an abscess be formed, for the patient cannot then bear the use of any remedies.

But there is another kind of stricture of the rectum, which exists lower down the bowel, of which I have seen ten cases. It occurs only in women who have had hemorrhoids, and who have borne children. I have never had an opportunity of examining any cases of this kind after death. There is a difficulty in their passing the feces,—pain and mucous discharge; abscesses form, which burst in various directions, and the symptoms altogether are very similar to those above narrated. The external part of the gut, below the verge of the anus, has the mucous membrane studded with small, flat, wart-like excrescences. A discharge of dark pus or mucus takes place from the mucous membrane, and the spaces between the warts ulcerate. I have seen one case of this kind, in which there was no contraction. In general, however, there is contraction to the extent of an inch and a half of the rectum. In one case the stricture was situated so low down as to appear as though a portion of the anus itself was contracted. You may recognise the presence of this disease by examination with the finger, and by its occurring in those who have borne children. I do not believe the disease to be a malignant one.

In treating such cases you must dilate the stricture, and keep it open by the use of a bougie, as in the former case. The bougie, I should tell you, causes great pain here. When you have dilated the stricture up to a certain point, wrap some lint, well smeared with mercurial ointment, around the bougie, and continue the use of this as long as you may consider necessary; then diminish the quantity of mercury by using the unguent. hydrarg. nitrat., with one or two parts of lard. In both the species of stricture which I have described to you, it is necessary to keep the bowels in a moderately open state; this is best effected by the lenitive electuary and castor oil. The action induced should be gentle, and not violent. The diet must not be such as to form hard feces. In the latter species of stricture described, arsenic will be found useful. If there be much pain and discharge, and the mucous membrane is extensively implicated, the liquor arsenicalis may be given externally. It has a particular action on the vessels of the rectum, and I suppose acts in these cases as a slight stimulus to the parts, inducing a healthy action in them.

If the stricture be situated high up in the sigmoid flexure of the colon, how are you to know or distinguish it? Why, the truth is, you can neither do the one nor the other. In the treatment likewise you cannot do anything. You cannot use a bougie; for those who are acquainted with the anatomy of these parts, well remember that the rectum is but a short gut, and terminates by turning abruptly at the sigmoid flexure of the colon. A straight bougie will not follow this curve; and if you find an impediment, which, in

all probability, will be caused by this curve, and you mistake it for the stricture, and use force to pass the bougie through, you will most likely perforate the intestine, and your patient will die through your ignorance and unskilfulness.

Mr. BRODIE concluded his lecture by narrating the facts of a case in which such an untoward accident as this occurred, and drew from it the opportunity of cautioning the students in the strongest manner against the indiscriminate and injudicious use of the bougie in all such cases.

The patient, on whose case the preceding observations were founded, has had the stricture divided by the *bistouri caché*, in the manner above alluded to, and afterwards had the bougie introduced, smeared with the mercurial ointment, from which treatment she derived great benefit, all traces of the stricture having now disappeared. Her general health is not good, and she has some troublesome irritable ulcers of the legs, for which she has been alternately taking the acid. nitric. dilut., and the liquor potassæ.

ST. THOMAS'S HOSPITAL.

EXTENSIVE LACERATION OF THE ARM, WITH COMPOUND FRACTURE — AMPUTATION AT THE SHOULDER-JOINT.

WEDNESDAY, the 21st, at about six o'clock in the evening, a boy, fourteen years of age, was brought to the hospital, with very extensive laceration and fracture of the arm, the greater part of the integuments being separated from the muscles, the fibres of which were extensively ruptured. The accident occurred while he was working a mustard mill. He says that in a moment he was seized with giddiness, and fell directly, in a state of stupor, when his arm became entangled in the spokes of the machine. He was immediately brought to the hospital. It happened that Messrs. TRAVERS and GREEN were on the spot, who, finding the arm in a horrid condition, thought it advisable immediately to amputate at the shoulder-joint.

Operation.—Mr. GREEN compressed the subclavian artery, and Mr. TRAVERS raised the deltoid muscle to form the flap, part of which had been lacerated. He then dislocated the joint, and divided the remaining muscles and integuments. The hemorrhage was not very extensive; the vessels were secured, and the flap was arranged, and kept in its situation by means of adhesive plaster and bandages. The boy was in a partial state of insensibility, from the time of the accident till the close of the operation. Since the operation the patient has been going on well. The parts are uniting by the first intention; scarcely any constitutional symptoms have appeared, and there is every chance of a speedy recovery.

SCROFULOUS DISEASE OF THE TIBIA, COMMENCING IN ITS MEDULLARY SUBSTANCE. — EXFOLIATION. — AMPUTATION.

Eliza Hardy, aged 31, of chlorotic appearance, was admitted into Lydia's Ward, September 3rd, 1833, for an extensive disease of the tibia, the symptoms of which made their first appearance seven years ago, occasioning at that time aching pains in the bone, which were soon succeeded by a lump on the inferior and anterior part of the tibia, causing great pain. She applied, of her own accord, a poultice to it, which soon caused it to suppurate, and in a few weeks it got apparently well. Since then she has continually suffered from pains and weakness in that leg. At the time of her admission to the Hospital the part was in a state of suppuration, and after some weeks there was an exfoliation of a large piece of the tibia. Several sinuses formed. Mr. GREEN at different times prescribed opiates to allay the constitutional irritation caused by the disease, and finding, from its extensive progress and nature, no hope of relieving the sufferer but by operation, recommended the removal of the limb, to which the patient submitted, and for which she was brought into the operating theatre on Friday last, at the usual hour.

Operation.—Mr. GREEN began by making a circular incision immediately below the spine of the tibia, made the flap, and cut through the muscles, in the ordinary way. In dividing the bones, however, the operator was excessively graceful, and employed extra skill. Genteelly taking the saw, he placed it on the posterior surface of the fibula, and with a due portion of *scratching*, divided the bone, conveniently working from behind forwards; after which he *sawed* through the tibia in the usual way. The vessels being secured, the wound was dressed in the ordinary manner.

On examination of the limb, a large collection of a cheesy matter was found to occupy the medullary part of the bone, surrounding a large loose piece occupying a considerable extent of its internal surface. The sinuses communicated in many directions with this pulpy collection, which extended to the joint. Mr. GREEN, who examined the limb after amputation, gave it as his opinion that it was a peculiar

scrofulous disease which commenced in the medullary surfaces of bones, and, as it increased, caused the exostosis, and that from the extension of the disease the joint subsequently became affected. Since the operation, the woman has been doing remarkably well.

HOPITAL DES ENFANS MALADES, PARIS.

SCARLATINA PIQUETTE, PRECEDED BY PREMONITORY SYMPTOMS FOR SEVERAL DAYS. — ADYNAMIC SYMPTOMS, COMBATED BY COLD AFFUSION. — VIOLENT DELIRIUM.—DEATH. — AUTOPSY.

HONDRICON, J. F., a boy 12 years of age, generally of good health, though of a nervous temperament, was seized at the latter end of July with headach and general uneasiness. These symptoms were soon followed by the access of intense fever; the abdomen was painful on pressure; the child vomited a good deal, was delirious at night, and was occasionally agitated by convulsive movement. These nervous accidents soon disappeared, but as the fever continued unabated the child was brought to the hospital on the 10th of August, thirteen days after his first attack.

11. The patient's face presents the appearance of great suffering; he complains much of the abdomen, which is somewhat tympanitic and tense, and very painful on pressure; there is also a good deal of pain about the orbital region. The vomiting has ceased, and there is no diarrhœa; the tongue is rosy and dry; the thirst is excessive; anorexia; the skin is very dry and hot; the pulse beats 120, rather weak than full. The child has a frequent dry cough, but on examining the chest we found the respiration sound. The intellectual faculties are not disturbed; there is no pain or redness of the throat or difficulty of deglutition. *Twelve leeches* to the abdomen; *emol. cataplasm*; also, *gum solution* for drink; *emol. lavement*; the leeches bled well; and in the evening the pulse was 100.

12. The abdominal pain has been relieved in a great degree by the leeches. The parietes of the belly do not present any sudamina or typhoid spots. The headach and fever persist as before. *Cont. remediis*, without leeches.

On the following days the patient did not present anything remarkable; the constipation was replaced by a diarrhœa, the appetite had returned, but he continued always a little feverish. On the 15th we perceived some sudamina on the neck and the anterior part of the thorax; on the 16th the fever returned with increased intensity; the patient complained of general uneasiness and of pain in the throat.

17. This morning an eruption of scarlatina piquetté has appeared, covering the whole body; the amygdalæ and pharynx are red and swollen; deglutition is much impeded; the skin is dry and burning; the child does not complain of the head, but during the night there was a great deal of agitation and delirium. The leech-bites on the abdomen are now in a state of ulceration; pulse quick and weak, 128. *Gum Solution*; *Sinapisms to the feet.*

10. To-day the eruption is very well marked; the trunk and limbs are quite red, being spotted here and there with the points which characterize this variety of scarlatina; the tongue is dry and red; there is a great deal of thirst, and the difficulty of deglutition remains. There is much anxiety of countenance; the child does not sleep during the night, but is constantly agitated and delirious. The skin continues dry and burning. In the morning a sponge dipped in water at the ordinary temperature had been passed over the whole surface of the body, but this application produced no change in the general state of the patient, nor did it seem to influence the eruption. *Continue cold sponging and sinap.*

19. To-day evident symptoms of prostration have set in. There has been violent dilirium during the whole night. The child now lies on his back, without moving in bed; the lips are dry, and covered with a dark crust; the tongue is red at the edges, but very black and dirty in the centre; the eyelids remain closed. The eruption has lost its red colour, and now presents a dark violet tinge. The leech-bites are surrounded with an erysipelatous circle, and the parietes of the abdomen, through its whole extent, are reddish, swollen, and exquisitely tender; the skin is very dry and warm; pulse feeble, 150. *Two effusions of Water at 15° Reaum., six hours interval between each; Sinapisms to the feet.*

20. The tongue and lips are covered with a dark crust, from the blood exuded by those parts. The patient is constantly delirious, and affected with convulsive motion of the flexor tendons of the wrists. The face is pale and the countenance discomposed; pupils natural; the eruption still retains its dark character on the limbs; one of the ulcerations on the abdomen is surrounded by a livid circle, as if that portion was about to become gangrenous; pulse weak, 155. *Continue the Effusions and Blisters to the legs.*

21. The child lies in a state of deep prostration; comatose. When spoken to, he rouses himself, and mutters a few words; pupils natural; the lips and tongue exude a good deal of dark blood; dysphagia. The eruption has now assumed a livid aspect; the pulse small and thready. The patient passed one involuntary evacuation since the morning; these symptoms persisted during the day, and towards evening an abundant epistaxis came on, and the child died.

Autopsy.

Cavity of the Cranium.—The sinuses of the dura mater are gorged with dark blood, and the vessels of the membrane covering the convolutions of the surface of the brain are also very full. The arachnoid membrane is quite transparent, and does not adhere to the pia mater in any point. The cerebral substance is of the normal consistence, and seems more injected than is natural in several points, each lateral ventricle contains a small quantity of serum.

Cavity of the Chest.—The larynx, pharynx, amygdalæ, and velum pendulum, present a livid red appearance, and are gorged with blood. The larynx, trachea, and bronchi, offer no trace of alteration, but the extreme terminations of the bronchial tubes are very red; there does not exist any adhesion between the layers of the pleura; and the structure of the lung is healthy; but near the middle of the upper part of the right lung there is a well-marked depression, on the surface of which we noticed several folds, converging to a centre; the lung at this point is hard, impermeable to air, and in the neighbourhood we find two or three tubercles; the heart, pericardium, and great vessels, are healthy.

Cavity of Abdomen.—The mucous membrane of the intestinal canal, of a gray-red colour, presents some irregular red spots, but the tissue is not softened or changed. Near the cæcum we noticed two small ulcers, situated in the glandulæ agminatæ; they were very small, and did not penetrate deeper than the mucous membrane; the submucous tissue below them was thickened; great intestines healthy.

VIOLENT SECONDARY SMALL-POX—DEATH.

In connexion with the observations on vaccination contained in our No. for April, 19th, page 114, made by the reporter of the *Royal Academy of Medicine*, we give the following case of secondary small-pox, which occurred during the course of last summer at the *Enfans Malades*. The child, it will be seen, had already had the small-pox, but the secondary disease was of a violent nature, and terminated in death. We have already reported a similar termination in the case of the boy Hail, who died on the twentieth day of the disease, with cerebral symptoms. We do not quote the case with a wish to throw discredit on the preservative powers of vaccination, but merely as an example of the severity with which variola may prevail, even when it attacks for the second time.

Sebillotte, a boy, eight years of age, generally enjoying good health, was received into the hospital on the 28th of September, 1833; he had not been vaccinated, but had evident traces of the small-pox on the face, and other parts of the body. The child had not been attacked by the measles or hooping-cough. About five or six days ago he fell upon his back on a stone, and has since experienced a great deal of pain in the loins; since the day before yesterday, the child has complained of excessive headach, with fever, &c. There has not been any diarrhœa or pain in the abdomen, nor does he cough.

On the 29th the fever augmented considerably; the skin was burning hot; pulse full, 120; the thirst excessive, and the child was agitated and delirious during a great part of the night; eleven ounces of blood were drawn from the arm, and he was ordered to take some emollient drink.

30. The delirium has been very violent during the night, particularly at the commencement of the evening. The eruption of small-pox has made its appearance since yesterday, a few small red spots, not prominent, being scattered over the body. The face is very slightly flushed, and marked with three or four papulæ only. The fever has been mitigated by the appearance of the eruption, for the skin today does not feel so warm and dry, and the pulse has fallen to 110; there is still a good deal of thirst; the child complains of pain in the throat, and the tongue is whitish, speckled red by several papillæ in a developed state; no stool; abdomen free from pain on pressure. *Half Lavement Emollient; Oxymel.*

Oct. 1. The fever continues abated; the skin is dry, but not very hot, and the pulse beats 112, quick, without any fulness. The flush of the face has disappeared, the eyes however seem injected, and the child was

violently delirious during the night, to such a degree, that the attendant was compelled to put on the strait-waistcoat; the tongue is a little cleaner than yesterday, and the pain of the throat continues; no stool; there is no uneasiness about the abdomen, nor does the boy complain of any pain in the head. *Half Lavm. Emol.; Oxymel, with Milk of Almonds,* ʒiv; *Sinapisms to the Legs.*

2. The face appears somewhat flushed to-day, but the pustules are not advancing; on the face and chin they present a crystalline appearance; on the lower extremities many of the pustules have sunk without suppurating in the slightest degree, and they are mixed with several large crystalline bullæ; the extremities are not swollen, nor is the face at all tumefied; the tongue is clean and moist; the eyes are sound, although the left one seems a little injected; the skin is not hot to-day, and the pulse is calm, but the delirium continued unabated during the night; the child has passed two stools. *Solution of Gum for Drink; Half Lavement; Sinapisms.*

3. Face much flushed; the pustules continue in the same state of retardation, although those on the face are perhaps a little more developed; the eyes are slightly injected; the temperature of the skin is moderate; pulse 90; the tongue is clean and moist; no stool. The patient does not complain of his head, but was delirious during the night; there is still some pain in the throat; the child is now affected with a dry hoarse cough, exceedingly like that which accompanies measles; on examining the state of the chest, we find the respiration perfectly pure. *Contin. remedia.*

4. The fever has reappeared in some degree to-day, and with it the development of the pustules has resumed its march. The face is flushed considerably; the skin very hot, and the pulse fullish, beating 86; no pain in the head or abdomen; the same degree of agitation and delirium prevailed as on the former night. The child complains of soreness in the eyes, which are now injected, but the eyelids are not swollen. *Cont. remed.*

5. Excessive agitation and delirium during the whole night. The march of the pustules is now regular; those on the face are filled with pus, and very confluent; the face is much swollen. The pustules are also filling on the extremities, and on the abdomen many of them present a dark purple aspect. The patient passed two stools during the day. The abdomen is not tender, but he now complains of the head. Pulse 138. The eyes are painful, and injected, and the eyelids much swollen. The pain of the throat nearly gone. *Infusion of Marsh-mallows; Half a lavement with Poppy Water; Sinapisms to the feet.*

6. The delirium abated last night, for the first time since the boy's illness. The cough is also diminished. The face is now very much swollen, and the pustules on it are quite full: the hands and feet are also tumefied. Skin not very hot; pulse rather full, 120; passed one stool. The eyelids are less infiltrated, and the conjunctivæ continue injected. Tongue clean and moist. No pain of head or abdomen. A good deal of thirst. *Same remedies.*

7. The pustules on the face are beginning to scab; the tongue is very white and moist; no pain of head or belly; one stool. The skin to-day is very warm, and the pulse is 110, not so full as yesterday. Respiration perfectly tranquil and sound. Little or no cough. The child slept well during the night, and was free from agitation. *Gum solution; Lavement.*

9. The pustules on the face, which is not much swollen, are now covered with crusts. The conjunctivæ have become inflamed, and discharge some pus in a small quantity. Tongue white and moist. The temperature of the skin is elevated; pulse 106. No pain of belly or head, but the delirium has returned nearly as intense as before, and the patient passed a very agitated night. Passed one scanty brown stool. *Half a lavement; Sinapisms to the feet.*

10. To-day symptoms of depression begin to appear: the child is weak and rather stupid; the scabs on the face are coming off; deep ill-conditioned ulcers underneath. There are a few dark spots on the legs, and several pustules on the inner side of the ankles present a purplish aspect. Belly not tender: the patient does not complain of the head, though he was delirious all night. The pulse is very rapid, small, 164. He asks constantly to drink, and seems in a state of great anxiety. These symptoms continued until evening; the protraction gradually became more marked, and the child died quietly during the night.

This is a well-marked example One of the most remarkable symptoms during the course of the disease was the constant delirium, which continued for ten days without ceasing, and was then suspended for an interval of forty-eight hours, to return again. The state of the cerebral organs, either before or after death, did not explain this unremitting disturbance of the intellectual faculties. We did not find any remarkable injection of the cerebral substance, or

trace of inflammation of the meninges: indeed, the patient did not present any cerebral symptoms during the progress of the disease, and the delirium, if not connected in some manner with the irregular condition of the eruption, depended on one of those slight alterations of the nervous centre which the anatomist cannot detect after death.

TORSION OF ARTERIES.—At the meeting of the *Westminster Medical Society*, (the last for the season,) held on the 26th ult., Mr. Costello mentioned the successful application of torsion in a case of amputation of the fore-arm, at Northampton. The details formerly given to the Society on this method of arresting hemorrhage, having by their publication in the medical periodicals reached the country, the subject had induced operating surgeons to put the method to the test. Some little time since being at Northampton, he (Mr. C.) was requested by the surgeons of the hospital to show the mode in which the torsion of a vessel was effected. He did so, and, at their desire, had one of his torsion forceps made at Milliken's for their use. At his last visit to that institution, a few days back, Mr. Percival, one of the surgeons, showed him a patient, a young man aged 24 years, whose fore-arm he had amputated ten days previously, and in whom the three arteries had been twisted. Mr. Percival assured him that he had never performed an operation in which so little blood was lost; it was in this respect as if the amputation had been performed on a dead subject. Mr. Costello examined the stump, the only un-united part of which was the integument, to the extent of about an inch in the middle of the line on which the flaps were joined. The operation was performed for a scrofulous disease of the wrist-joint, and the patient was doing well. The *Northampton Hospital* may thus, probably, claim the initiative in the case of torsion in this country. In concluding these remarks on the subject, Mr. Costello said with respect to the manœuvre itself, "that in Mr. Percival's case, there were but four half twists made on each vessel, which he (Mr. C.) did not think sufficient as age neral rule, although they were fortunately successful in this instance. In vessels of the size of the radial and ulnar arteries, from four to six, or even eight twists, are required; and twisting till the portion of vessel held in the forceps drops off, is also a safe method."

PARLIAMENTARY COMMITTEE.—Since the last Number of our Journal went to press, the following witnesses have been examined before the Medical Committee of the House of Commons:—Sir A. COOPER, Sir CHARLES BELL, Mr. WARDROP, Mr. TRAVERS, Mr. BRODIE, Mr. GRAINGER, Mr. CARPUE, Mr. LAWRENCE, Mr. SCOTT, Sir A. CARLISLE, Mr. GREEN, and Dr. SOMERVILLE.

OPERATION.—At the last meeting of the *Royal Academy of Medicine*, M. Blandin presented to the members an old female, on whom he had successfully performed amputation of the whole superior maxillary bone on the left side.

IRREGULARITIES AT THE LONDON HOSPITAL.—*To the Editor of* THE LANCET.—Sir,—I fully concur in the excellent letter of your correspondent "Candid," published in the last number of your periodical; but as I have heard some of the disaffected express themselves not satisfied with his extenuations of the senior surgeon, allow me to add, that when Sir William Blizard was senior surgeon to this hospital, the other surgeons from courtesy towards him appointed Wednesday, Sir William's day for visiting the hospital, for the performance of all operations not of immediate urgency; and I have no doubt but that Mr. Andrews, on Sir William's resignation, expected that the same courtesy would be extended towards him. On finding, however, that the two junior surgeons operated only on their own days, and knowing the inconvenience under which the pupils laboured from this irregularity, he immediately performed all his operations on Wednesday as heretofore; the other surgeons, disregarding the interests of the pupils, continue to operate when they like. This controversy is greatly to be regretted, especially as it is carried on in a journal of such immense circulation as THE LANCET. I am, however, fully convinced that in this instance, as well as in every other, Mr. Andrews has always considered the welfare of his pupils before his own convenience.—Yours respectfully,—M. O. T.

London Hospital, May 5, 1834.

The Correspondent who says he is "well aware of his careless and diffuse style," cannot, after such an acknowledgment, with fairness complain that we declined to present his letter to the public in the very slovenly form in which it was sent to us. The second communication, however, is in a great measure free from the faults of its predecessor, and shall appear the moment we have room for it. Why write carelessly and diffusely on an important subject?

The letters of *Dr. Wilkinson*, *Mr. Clark*, and *Dr. Epps*, have reached us.

A Student (Ramsgate). Milligan's.

Galen. The learned President and the stupid bespatterer are worthy of each other. It is not in the power of such ninnies to humbug the profession or injure the public.

The letters of *Mr. Pearson*, *Mr. Howard*, *Mr. Inglis*, *Mr. Wilton*, and *Mr. J. Glasford Shepherd*, have been received.

ERRATUM.—In consequence of some inexplicable accident at the printing-office, the figure of 6 was substituted for that of 8, in stating the price of this journal on the cover of a portion of our last week's number.